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STUDIES IN MANITOBA ROCK ART

PETROFORMS

1986

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IMPORTANT

Archaeological sites constitute a very fragile resource that requires careful handling. Archaeologists have devised a wide range of methods and techniques whereby archaeological information can be gathered from the field in an orderly and scientific fashion. Inasmuch as such activity invariably affects what we stand to learn about our heritage as Manitobans, it is incumbent upon the Province to ensure that these resources are handled properly via these special methods and techniques. To that end, anyone wishing to collect or excavate for archaeological objects is required under Section 53 of the Heritage Resources Act to obtain a permit from the Province to do so. This allows the appropriate officials to specify the nature of the work to be done in light of the collector's or excavator's qualifications and experience. Such a permit may also stipulate that the results of investigation must be reported to the appropriate Provincial agency. If all findings are so reported, there exists the opportunity to have new information studied and presented to the public by a central authority established for that purpose. The book you are now reading is a case in point.

If, quite by accident, you come upon an archaeological object, or an item that you suspect is an archaeological object, you are required under Section 46 of the Act to report the discovery to the Minister. If it appears that the object is still in place in the ground, that is, it has not been totally displaced from its natural setting or stratum, it should be left there and the Minister informed of it. Such a discovery could prove very important to our understanding of local or regional history.

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STUDIES IN MANITOBA ROCK ART:

PETROFORMS

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PREFACE

Probably one of, if not the, most spectacular classes of prehistoric phenomena to be found in Manitoba is the "petroform," otherwise known as "boulder mosaic" or "boulder outline." Research into the form, function, and authorship of these features has been undertaken by Dr. J. H. Steinbring and his students and associates for the past decade. Some of the results of their work appear in this book.

Like other prehistoric manifestations, petroforms are part of the cultural heritage of all Manitobans. The only way this heritage can be made available to those genuinely interested in it is by way of detailed studies by properly trained experts. Unfortunately, things like petroforms are subject to destruction, both by natural forces and at the hands of modern man. Once they are disrupted, it may be impossible to conduct informative and meaningful studies of the sort described in this book. As a consequence, a great store of knowledge can be lost forever.

Among the human agents who destroy our cultural heritage are those who, out of ignorance or disrespect, alter and degrade archaeological sites. As a result of these activities, all Manitobans are robbed of a portion of their historic identity. This erosion of our cultural heritage is becoming ever more serious as areas hitherto inaccessible are being opened up and visited for purposes of land development, resource exploitation, and recreation.

In publishing the information contained in this book, we are faced with something of a dilemma. Because the subject matter is, in a very real sense, the property of the people of Manitoba; and further, since the research that lay behind this publication was done with public funds, the people of this Province have a right to the knowledge con-

tained herein. On the other hand, publication of accurate and detailed information carries with it the risk that it may fall into the hands of irresponsible persons who take it upon themselves to vandalise and disrupt the fragile condition of these features.

One may well ask: "Does it really make that much difference if these features are disturbed, now that they have been studied?" The answer is "yes," simply because research techniques become more and more sophisticated and refined as time goes on. Thus, we may be in a position to derive new interpretations from the petroforms in the future, and for this reason they must be left intact.

To all those who read this book, then, a particular responsibility arises. We seek your co-operation in protecting these sites, not only by leaving them untouched yourselves, but also by advising others of their value and worth. With the assistance and goodwill of the informed public, we will be able to continue to take full and proper advantage of the priceless and irreplaceable cultural heritage it is our privilege to possess.

Leo Pettipas
Staff Archaeologist
Historic Resources Branch

BOULDER ART IN EASTERN MANITOBA*

by

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Department of Anthropology
University of Winnipeg

*This paper was originally delivered to the 2nd Meeting of the Canadian Rock Art Research Associates, Dec. 3, 1971, University of Saskatchewan, Saskatoon, Saskatchewan.

Currently available data indicate the presence of some 40 aboriginal boulder arrangements in the Shield region of Eastern Manitoba. Most of these sites, which consist of geometrics and effigies laid out upon open granite tablerock, are found in the Whiteshell Provincial Park but with at least two small sites located in adjoining N. W. Ontario. Until recently (Sutton 1964, Steinbring 1970b), no detailed description of these sites had been published. The only anthropologist to comment on them had been Leechman (1949), who provided no maps or documented illustrations, but who did draw attention to a North American distribution of the phenomenon. In doing so, he was probably using the statements made by Lewis (1889, 1890), Thomas (1894), and Simms (1903), who collectively established the data for this distribution. It embraced Minnesota, Iowa, the Dakotas and Montana. In addition to the recent reports on Manitoba, extensive recording of boulder sites has been undertaken in Alberta (Bryan 1968).

With the exception of "medicine wheels" and the bison effigies --found only in Alberta, Montana and Iowa--all of the general types of boulder features are present in the Whiteshell of Manitoba. These types include circles, birds, snakes, turtles, human effigies, parallel or single boulder lines, connecting lines (or "pathways"), triangles, crosses, heaps or cairns, oblong or elliptical enclosures, and rectangular enclosures. A possibly significant difference between the eastern Manitoba cluster and those of the Mid-West and West is expressed as a sharply contrasting limit to variation in the latter occurrences. Outside the Whiteshell, boulder site clusters within a region consist mainly of one or two forms. The variety within the Whiteshell regional cluster, embracing nearly all comparable North American forms, might suggest a

source locality from which the phenomenon spread west.

Turtle and snake effigies are the predominant types in the Whiteshell and are also well represented in the Mid-West and in the Northern Plains. These motifs are common in the mythology (and some pictography) of the Algonkian-speaking Ojibwa who occupy the Whiteshell region today. At least one rock painting (in blue) is known to have been made by an Ojibwa shaman in which two snakes and a turtle are combined. The painting was done at Wanipigow, Manitoba, in 1905 on a limestone cliff overlooking Black Island in Lake Winnipeg. The painting subsequently became exfoliated, and is now lost. Turtles and serpents are common themes in the rock pictography of the Canadian Shield. Dewdney (1967) has recorded many, some of which are so similar that, despite their substantial geographic separations, some kind of relationship seems inevitable.

Dewdney (1970) views latitudinal physiographic alignments of rock pictography and Midé bark pictography as being more than coincidental. If such a correspondence with Ojibwa culture does exist, it does not readily help in solving the turtle-serpent boulder form distribution, which is broadly diffused to the west and southwest of the Ojibwa territorial boundaries. A possible explanation may involve the prehistoric spread of Algonkian-speaking peoples from east to west (Bryan 1968). Such a position might be sustained by boulder effigy type-correspondences between those of identifiable Blackfoot sites and the eastern occurrences. One such correspondence is observed in the presence of a "life-line" (Habgood 1967) seen in Alberta boulder figures, and present also at the Tie Creek site, largest in the Whiteshell and probably the largest of its kind in North America. This site occupies at least nine acres of

granitic tablerock along the Winnipeg River, and consists of several large geometric features joined together by boulder lines. In addition, an animal or bird effigy with a "heart line" is present. It roughly resembles the Consort and Steveville features in Alberta (Wormington and Forbis 1965), and seems to have no close parallels in the other areas of boulder site occurrence. It is worth pointing out that the closest correspondences for the heart-line attribute in petrographs are reported by Habgood (1967) and are also found in Alberta. However, the rest of the Tie Creek site (Steinbring 1970b) is unique.

An hypothesis of prehistoric movements to the west by proto-Algonkian or Algonkian-speaking peoples appears consistent with the Western data (Bryan 1968). The antiquity of the initial phases of such movements is difficult to establish. Whether Algonkian-related or not, movements datable to about 2,500 B.C. can be attributed with a fair degree of confidence to forest-adapted culture of the continental center and Upper Great Lakes. At this time, and for a long time following, a steady stream of influences proceeded along the major waterways from Lake Superior all the way to Alberta. Among the diagnostic features of this movement are the highly stylized artifacts of cold-hammered, native copper. Wormington and Forbis (1965) are probably correct in associating the copper crescent "knife" found near Castor Creek, Alberta, with the side-notched Oxbow projectile point type excavated from a nearby site. The conclusion that Oxbow has an eastern source is borne out by the occurrence of the point in direct association with several copper artifacts in a site on the Winnipeg River (Steinbring 1970a). The westward movement of copper from its dense eastern centers is obvious, as are the numerous side-notched projectile point prototypes in deep stratified positions of

Mid-Western sites (Wittry 1959, Fowler 1959). All of these latter substantially antedate the western occurrence of Oxbow. The extent, the characteristics, and the timing of this spread are not yet known; it would appear, however, to be of large-scale historical consequence, perhaps in the nature of a broad precedent reflected from time to time in the specific movements of known groups. From this it would be possible to consider the Ojibwa migrations of the 18th and early 19th centuries as a recent expression of a long series of westward population expansions. There is no reason to reject prehistoric assessments for Shield Rock Paintings, and there are instances in which a substantial age seems probable (Steinbring and Elias 1968). Heizer and Baumhoff (1962) have tentatively assigned petroglyph sites of California and Nevada to dates ranging from 5,000 B.C. to about A.D. 1. The extensive encroachment of lichen onto a circular feature (#3) at the Tie Creek Boulder Site would permit a minimum assessment of 1,000 years for this site on lichenometric grounds. Only the phenomenon of boulder arrangement itself, however, relates this date to typological attributes also assignable to clear ethnic entities or to macro-linguistic groups. It is at this time only a guarded opinion that boulder sites in the continental center relate vaguely to Shield petrography, and that the two share an extensive history with the formation and spread of the basic Algonkian cultural configuration.

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THE 1973 ROCK ART STUDIES AT THE TIE CREEK SITE

A PRELIMINARY REPORT

by

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1973

The Tie Creek Boulder Site (EaKv-9) was mapped in August and September of 1973 by a crew from the Department of Anthropology, University of Winnipeg. For this project, the reticule method, as devised by Dr. L. A. Bayrock of the Alberta Research Council, was employed. The reticule consists of a square wooden frame, ten feet to a side, with strings set at one-foot intervals and equipped with self-levelling legs to form a portable grid. The reticule is sighted into position by means of a transit. By this method, a grid can be laid over the entire site and each rock plotted accurately within it. The accuracy that this technique affords allows researchers to conduct finer interpretational studies in the laboratory, and also enables workers to determine even the slightest displacement of boulders over time. The eight features at the site were mapped individually onto coded plattes, with the relative distances and orientations recorded for a composite map. The features are presented in Appendix I.

This project has, over the past year, provided the Department with the opportunity to investigate new dimensions of rock art studies. Prior suggestions concerning petroforms have been strengthened. These include (1) the Algonkian authorship, (2) the initial date of construction between 500 B.C. and A.D. 1, and (3) the view that the Whiteshell is the most probable point of origin of the phenomenon in North America. Some new observations and conclusions have also been reached.

There is a consistency of alignment among features exhibiting a similar morphology. Linear and elliptical arrangements are orientated along a northeast-to-southwest axis, such that at midsummer they closely

approximate the rising azimuth of the sun. The alignment of these two classes of features in the Whiteshell is entirely consistent with the orientation of similar features in Alberta and Colorado. Turtle effigies exhibit a 90% consistency of orientation towards the west. Features Numbers Three and Four (Fig. 3, 4) at the Tie Creek Site are orientated towards celestial north to an accuracy of one-half a degree, while the opening of Feature Five (Fig. 5) is aligned with true west. The observation that the builders of these sites were not only cognizant of, but preoccupied with, the cardinal directions and the movements of celestial bodies has yielded insight into the world-view of these people. Such findings encourage informed speculation upon the activities of these ceremonial centres on a finer level than has previously been possible.[1] The consistency of orientation of particular classes of petroforms within a continental context supports the hypothesis of a single linguistic group being responsible for their construction throughout all of interior North America.

Lichen studies were also conducted as part of a ten-year plan to date the construction of the Tie Creek Site by the lichenometric method.

Further excavation at the Astwood (discussed elsewhere in the volume) and related sites is crucial to understanding more of the cultural dynamics and time-depth associated with this phenomenon. An expansion of our sample through the mapping of more petroform sites, both in the Whiteshell and in Southwestern Manitoba, will undoubtedly yield more evidence and serve to ground present and further theory in empirical fact.

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FOOTNOTE

1. This topic is given further attention in the two papers that follow.

Fig. 1 Feature 1,
Tie Creek Site

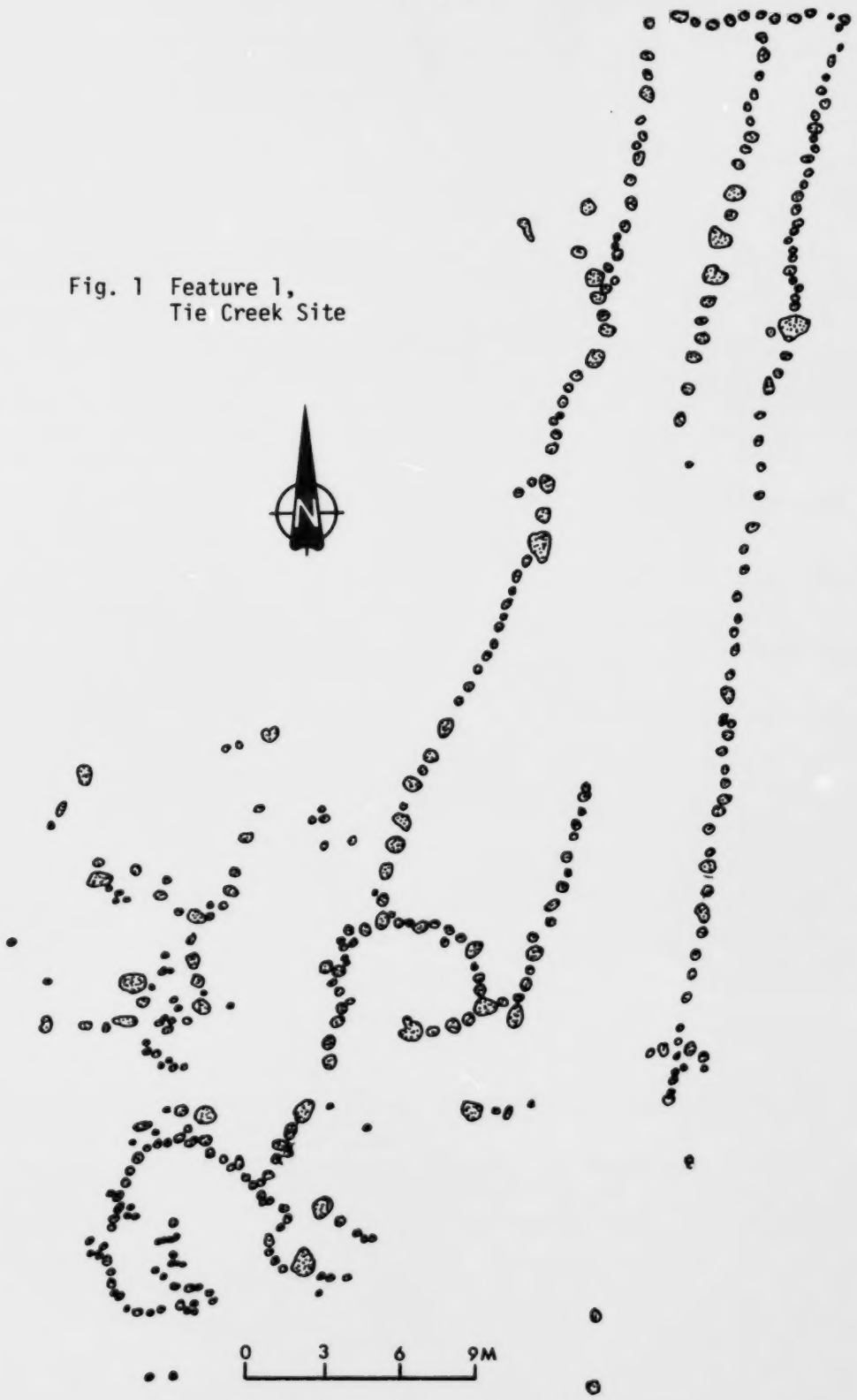
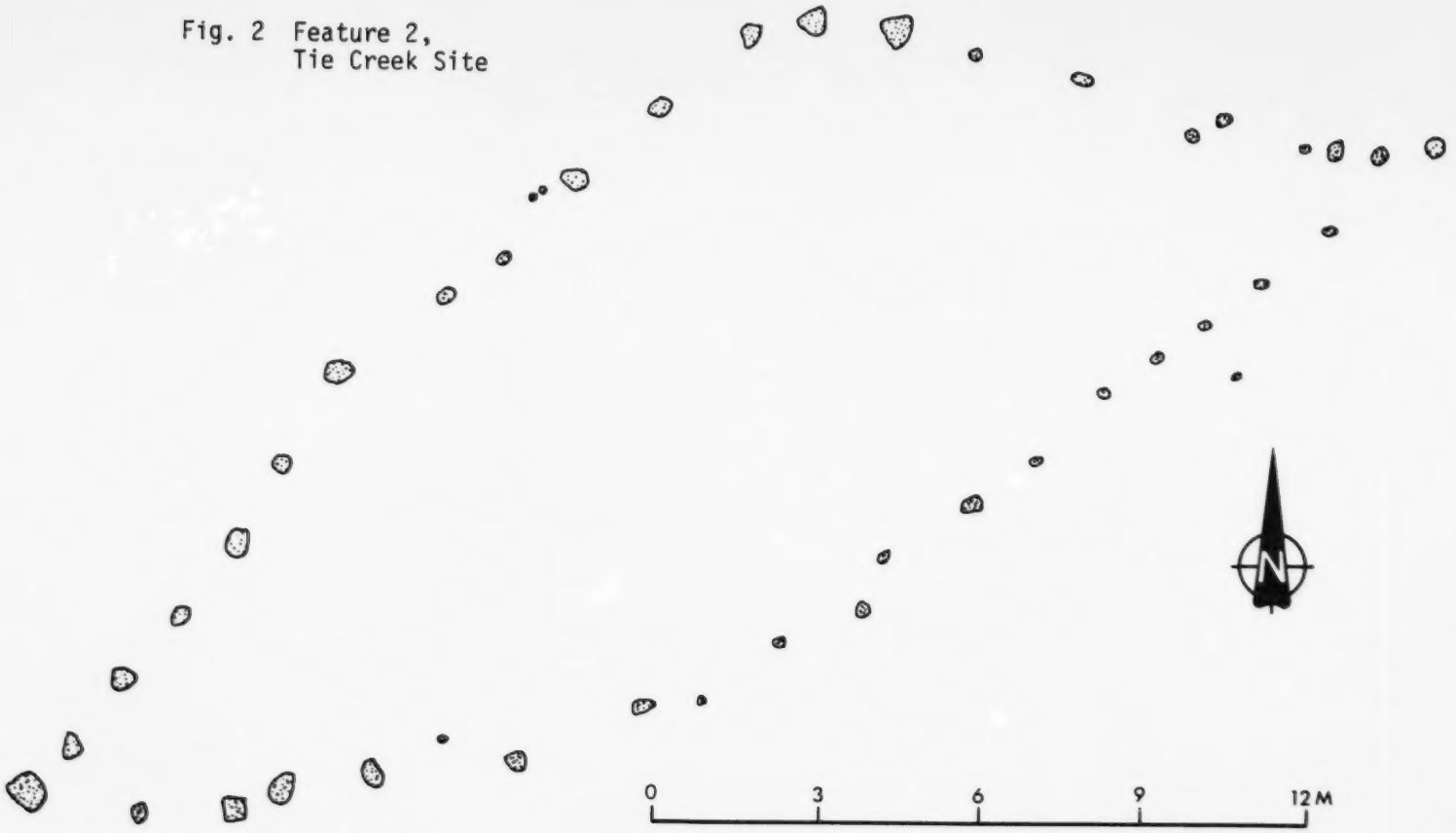


Fig. 2 Feature 2,
Tie Creek Site



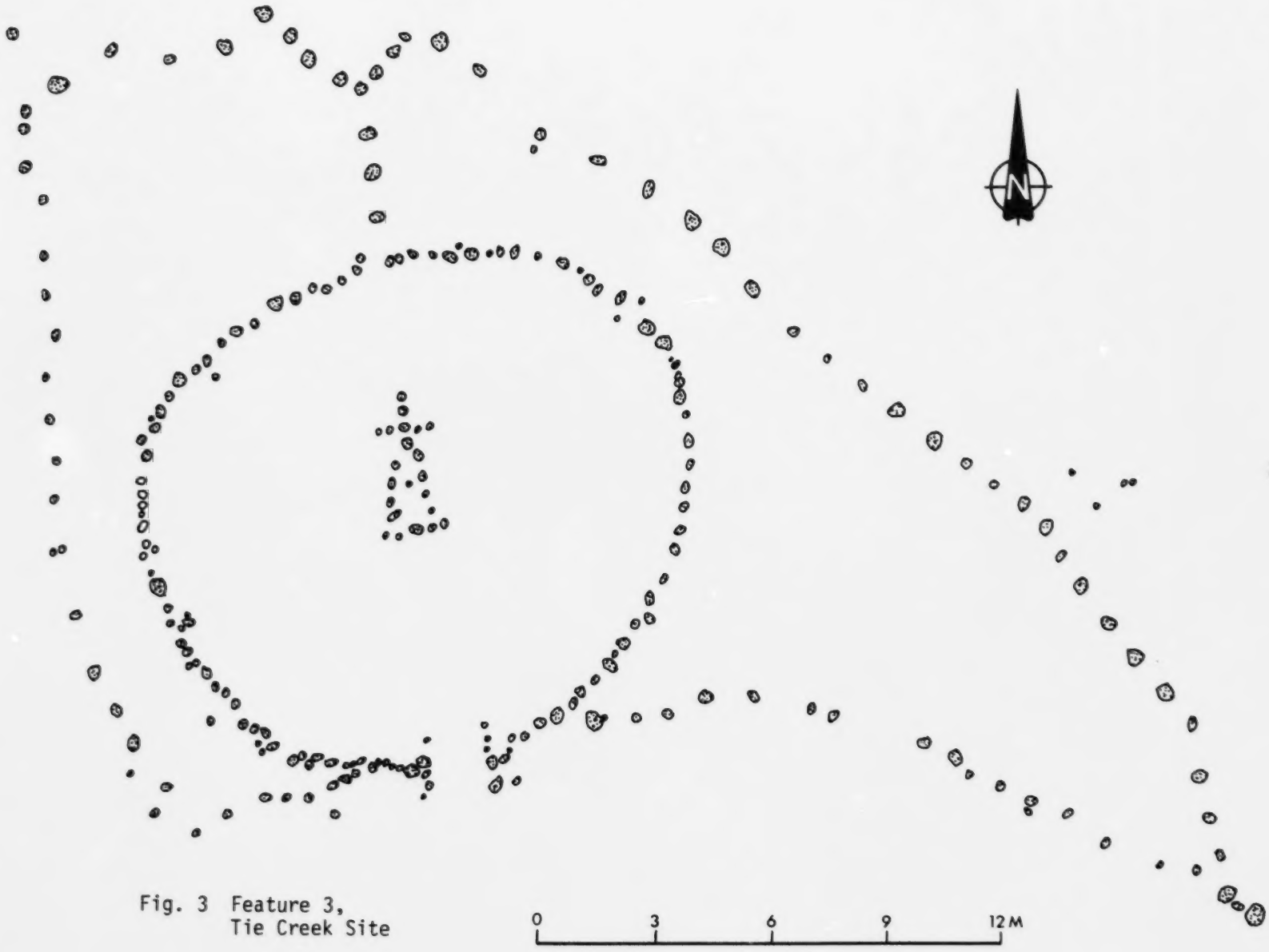


Fig. 3 Feature 3,
Tie Creek Site

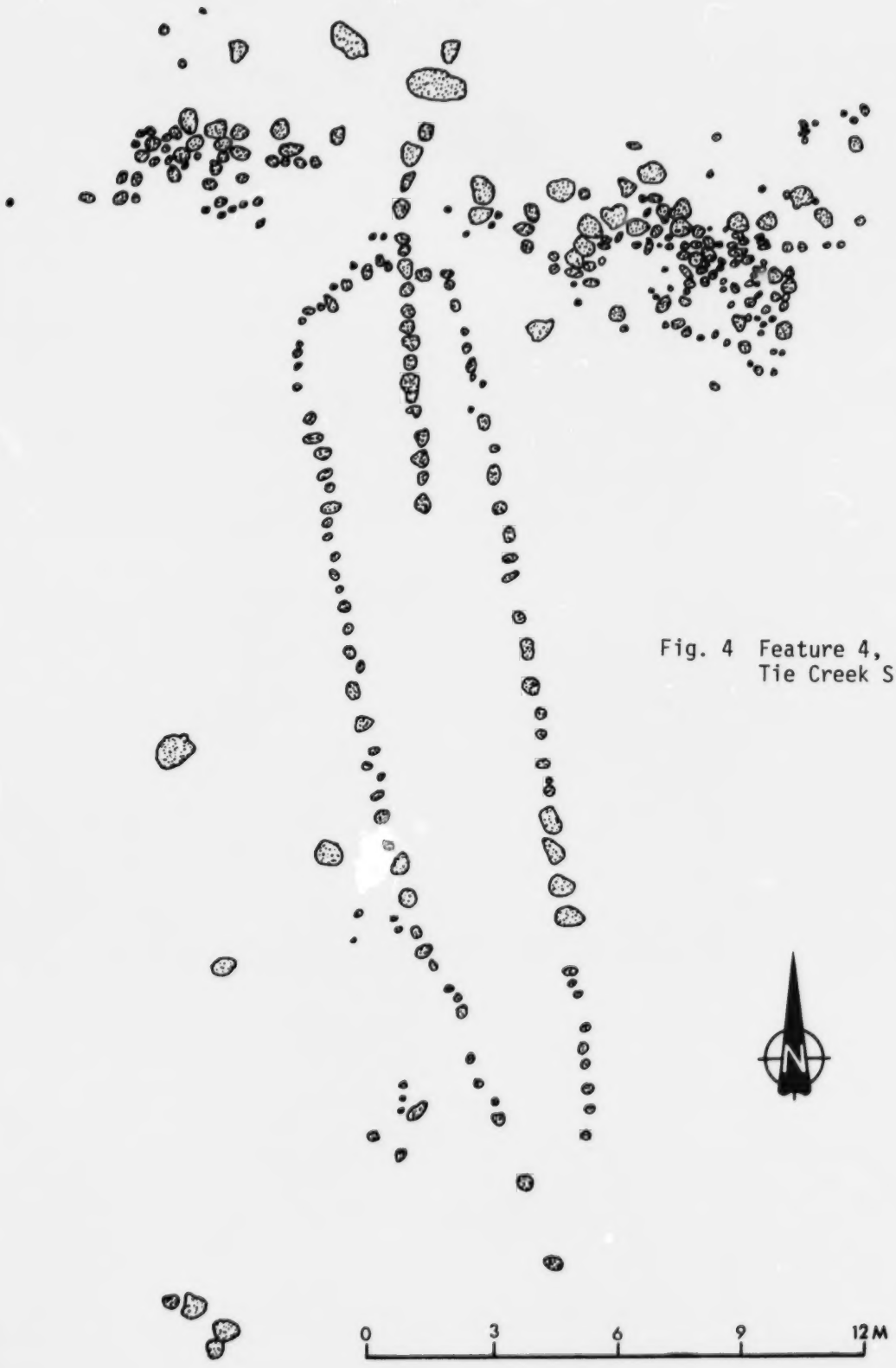


Fig. 4 Feature 4,
Tie Creek Site

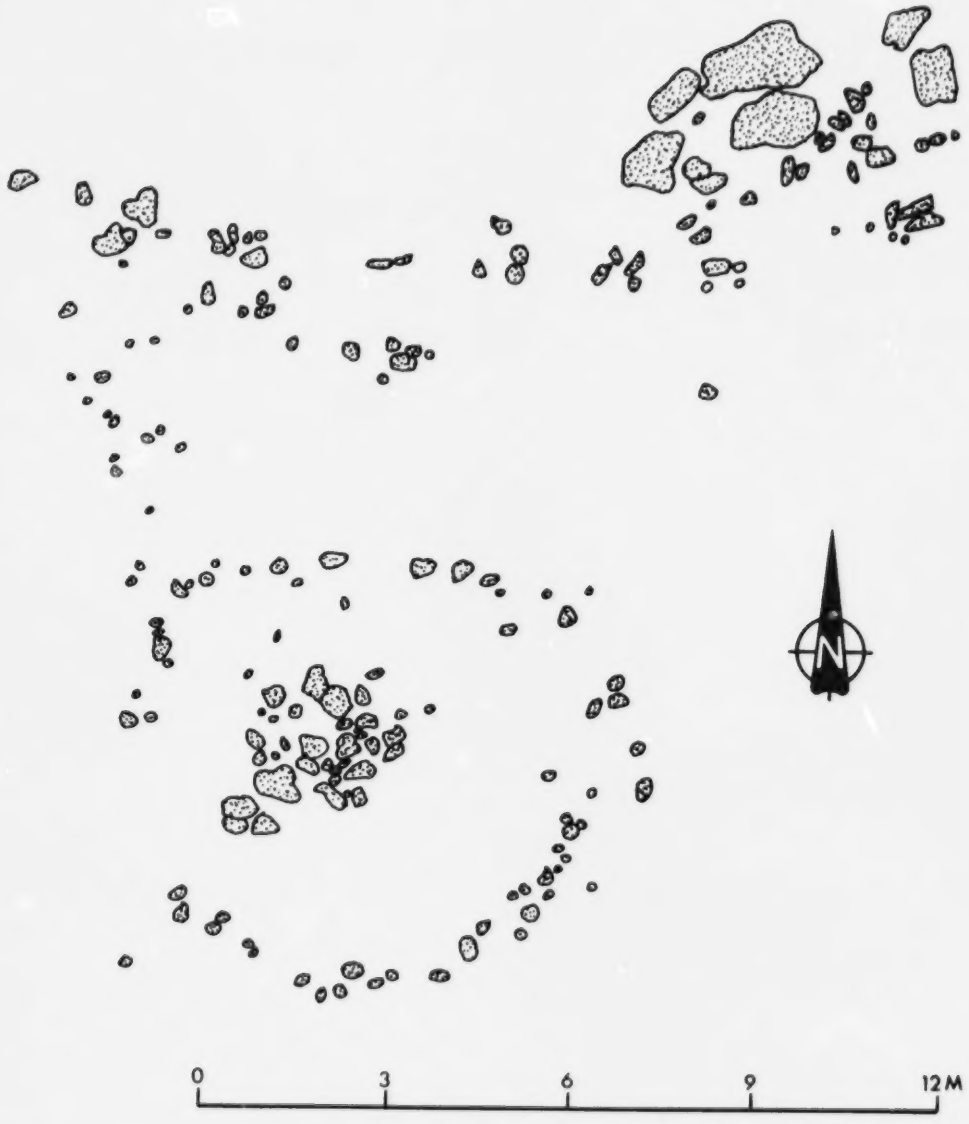


Fig. 5 Feature 5, Tie Creek Site

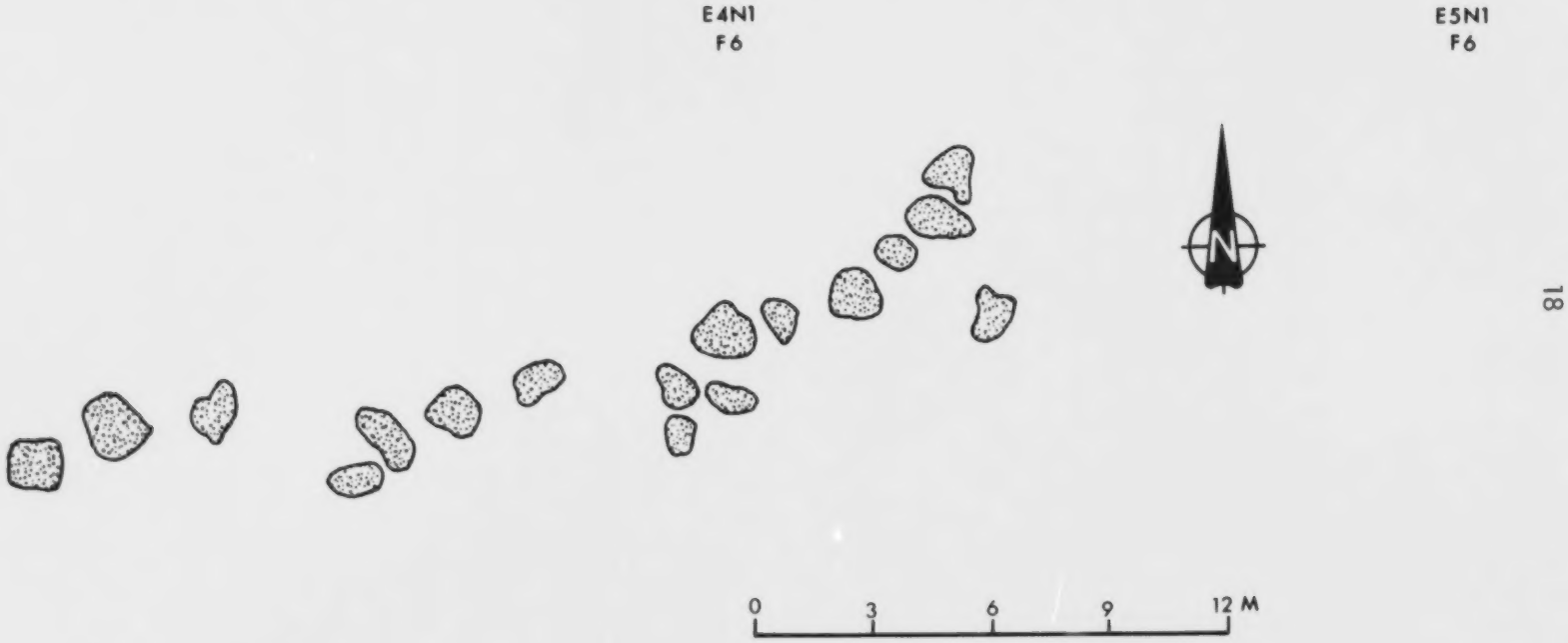


Fig. 6 Feature 6,
Tie Creek Site

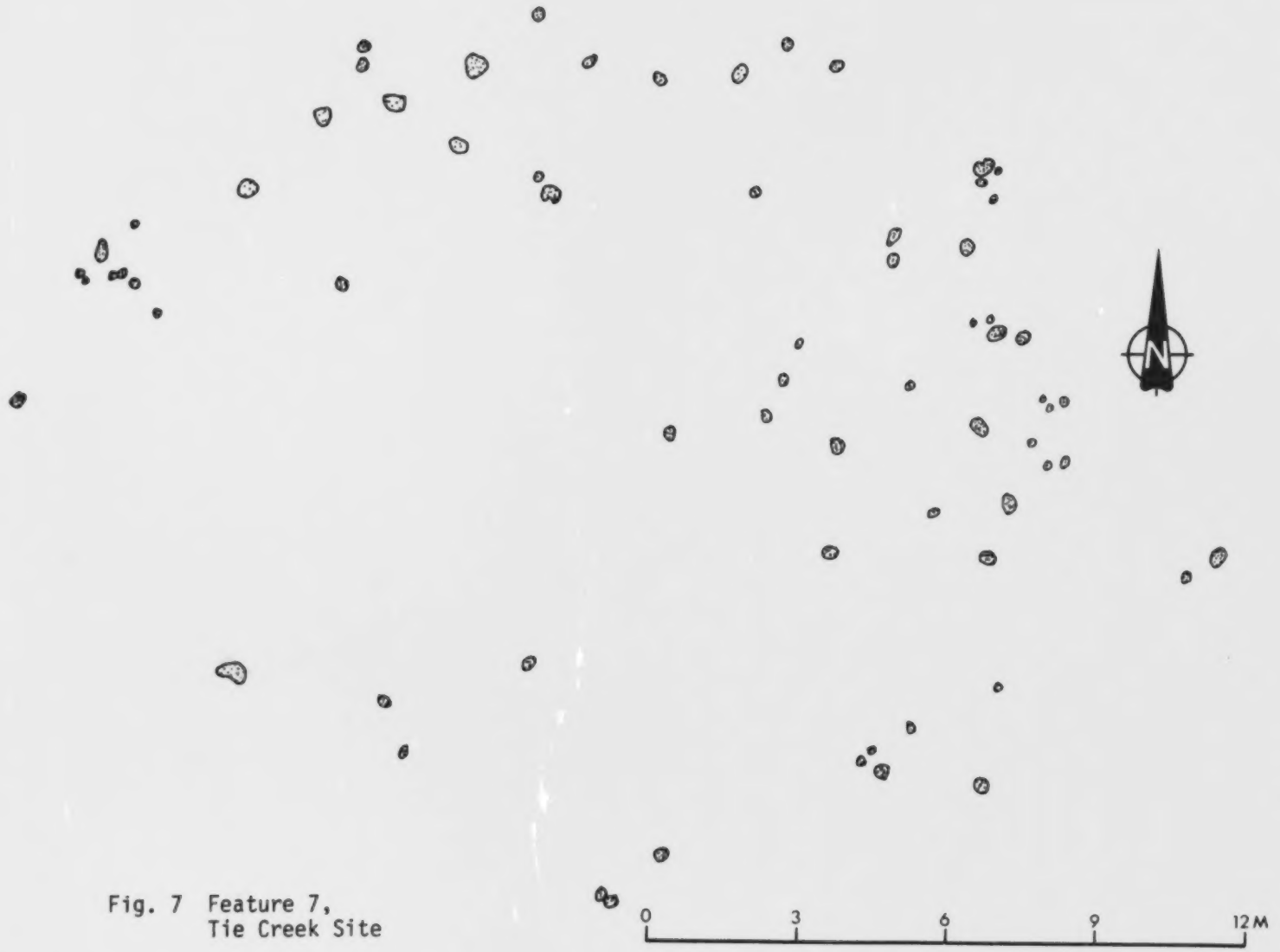


Fig. 7 Feature 7,
Tie Creek Site

Fig. 8 Feature 8,
Tie Creek Site

A SURVEY OF SOUTHEASTERN MANITOBAN PETROFORMS - 1974

by

Anthony P. Buchner
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University of Winnipeg

1974

Five previously reported sites were mapped by the reticule method this summer under a grant by the Manitoba Historic Resources Branch. These were Astwood Feature 1, the Jessica Exit Site Features 1, 8 and 9, three features at the Scarfe Site, the Malloy Lake Site, and the Pine Point Snake (Figs. 1 - 6). In addition, a new site at White Lake was recorded (Fig. 7).

The Pine Point Snake was originally recorded and mapped by Sutton in 1965, but as this feature is now located directly on a new hiking trail to Pine Point Rapids, it was decided that it should be remapped in order to determine if any displacement had occurred. This would also serve to compare the reticule method of mapping with the more traditional approach used previously.

Both this procedure and the author's recollection of the site from visits in 1972 and 1973 revealed that the feature had in fact been disturbed. The snake's head had been rotated approximately 15 degrees in a counter-clockwise direction, and the minute stones which once were a part of the end of the tail had been removed and/or crushed by careless hikers. The only other discernible discrepancy between the two maps were minor differences in spacing which can be attributed to the mapping techniques themselves.

Pine Point Snake is an excellent example of prehistoric rock art. The slope of the rock face and the size and shape of the stones utilized were masterfully chosen to create the effect of sinuousity and motion.

Astwood Feature 1 was mapped by a University of Winnipeg crew in August of 1973, but it was decided that more of the surrounding area should be included in order to gain a more accurate picture of the

original morphology of this highly disturbed arrangement.

At the Jessica Exit Site, nine features were defined: three lines, two cairns, and four uprights. Only the lines were mapped, however, as the uprights and cairns do not lend themselves to mapping by the reticule method. The present writer would concur with previous workers that most of this site is historical, although judgement is reserved on the two larger lines, Features 1 and 8.

Three features were defined at the Scarfe Site, although the third, a triangle, is highly tentative. The others, however, are constructed clearly and with regularity. These are Feature #1, a circle, and Feature #2, a line.

The Malloy Lake Site was also mapped. This site consists of a single square feature with four stones placed in a square at its centre. This is the only known feature in Manitoba exhibiting this particular morphology.

The only "new" site to be recorded this summer was the White Lake Site: 50 degrees, 2 minutes, 33.9 seconds north lattitude by 95 degrees, 33 minutes, 24.0 seconds west longitude. The site is located at the north west corner of White Lake on the east shore of the Whiteshell River, and consists of a single elliptical feature situated on a small open rockface. The feature is oriented along a northeast-southwest axis and may have a small opening at its southwest end. It differs significantly from previously studied ellipses in that the rockface slopes slightly downwards to the northeast instead of upwards in this direction.

With the exception of the Astwood Site, all of these features were previously recorded only photographically or as sketch maps. Reti-

culing them has provided the opportunity for finer interpretational studies than is possible through either of the former methods. The orientational significance of these features has been assessed and it has been found that they conform entirely to the orientations of features of a similar morphology studied in 1973. Four new lines have been mapped: Jesica Exit Features 1, 8 and 9, and Scarfe Site Feature 2. All of these exhibit the characteristic northeast-to-southwest alignment found among other linear features in Manitoba, Alberta, and Colorado. The White Lake elipse is oriented similarly to ellipses at the Astwood and Tie Creek Sites -- all northeast-to-southwest. Scarfe Site Feature 2, a near-perfect circle with a "doorway" which opens to true west, parallels Feature 5 at the Tie Creek Site with regard to its orientation.

In an earlier study, the present writer attempted to illustrate this consistency and interpret it in terms of orientation with astronomical events -- particularly the rising azimuth of the sun on the summer solstice. To test this hypothesis, he was present at the Tie Creek Site on the morning of June 21, 1974, and stationed cameras at the southwestern tip of the line of large boulders which runs through Feature 1 to the northeast. At 5:27 A.M., the precise time that the sun was fully visible above the horizon, it was found that the line was perfectly oriented towards the sun. Furthermore, slightly to the southwest of the end boulder and along an extension of the line, a circle of stones was found positioned in such a way as to present a person standing at its centre with a perfect view of the event. The boulders which make up the line are undoubtedly the largest at the site which exhibit any discernible configuration. Dr. L. A. Bayrock, who has studied the petroform sites of Alberta for many years, visited the Tie Creek Site in 1972 and suggested

that this line may well have been part of a pre-existent feature. Our findings tend to support his view.

Ellipses, however, while exhibiting the same general orientation, do not appear to align with the summer solstice sunrise as closely. It is entirely possible that they align with the sunrise at periods of a lunar month after and/or before the summer stolstice, but inclement weather prevented us from testing this hypothesis. Another more recent idea was prompted by Prof. J. H. Steinbring's work on the correlation between the morphologies of certain Archaic copper specimens and pictographic representations of astronomical objects. The northeastern sky, particularly the area between 45 and 60 degrees off true north, is the point of ascension not only of the sun but also of the moon, Venus, Mars, and Jupiter on astronomically significant days. On the morning of the summer solstice at the Astwood Petroform Site, both Mars and Venus were extremely bright and rose shortly prior to the sunrise. The White Lake ellipse is oriented more northwardly than any ellipse known to the author -- too far in fact for it to align with the sunrise on any day of the year. Its exact orientation is 53.5 degrees off true north and this corresponds with the rising of the moon at its most northerly azimuth given a horizon elevation of 60 degrees. It may well be the case that linear features are correlative with solar events while ellipses align with lunar or even planetary events (these bodies are known to figure significantly in the mythology and ethnology of some aboriginal North American groups).

Speculation such as this may seem far-fetched to some, but to date it is the only rational explanation for the amazing consistency of orientation of similarly-shaped boulder arrangements found across the

Northern Plains region of Canada and south to Colorado. The logistics of testing all of the possible combinations inherent to this idea are awesome, requiring crews at a number of isolated sites on specific dates over a long period of time. But until this is done, orientational study remains one of the few vehicles available to the archaeologist interested in this unique and scientifically important phenomenon.

Southwestern Manitoba is one area rich in petroforms which have been reported in only a cursory fashion. These must be accurately mapped and recorded as soon as possible so that this untapped source of potential information is not lost. Manitoba's southwest may well provide a tighter link with the Middle Woodland peoples in Canada's far west.

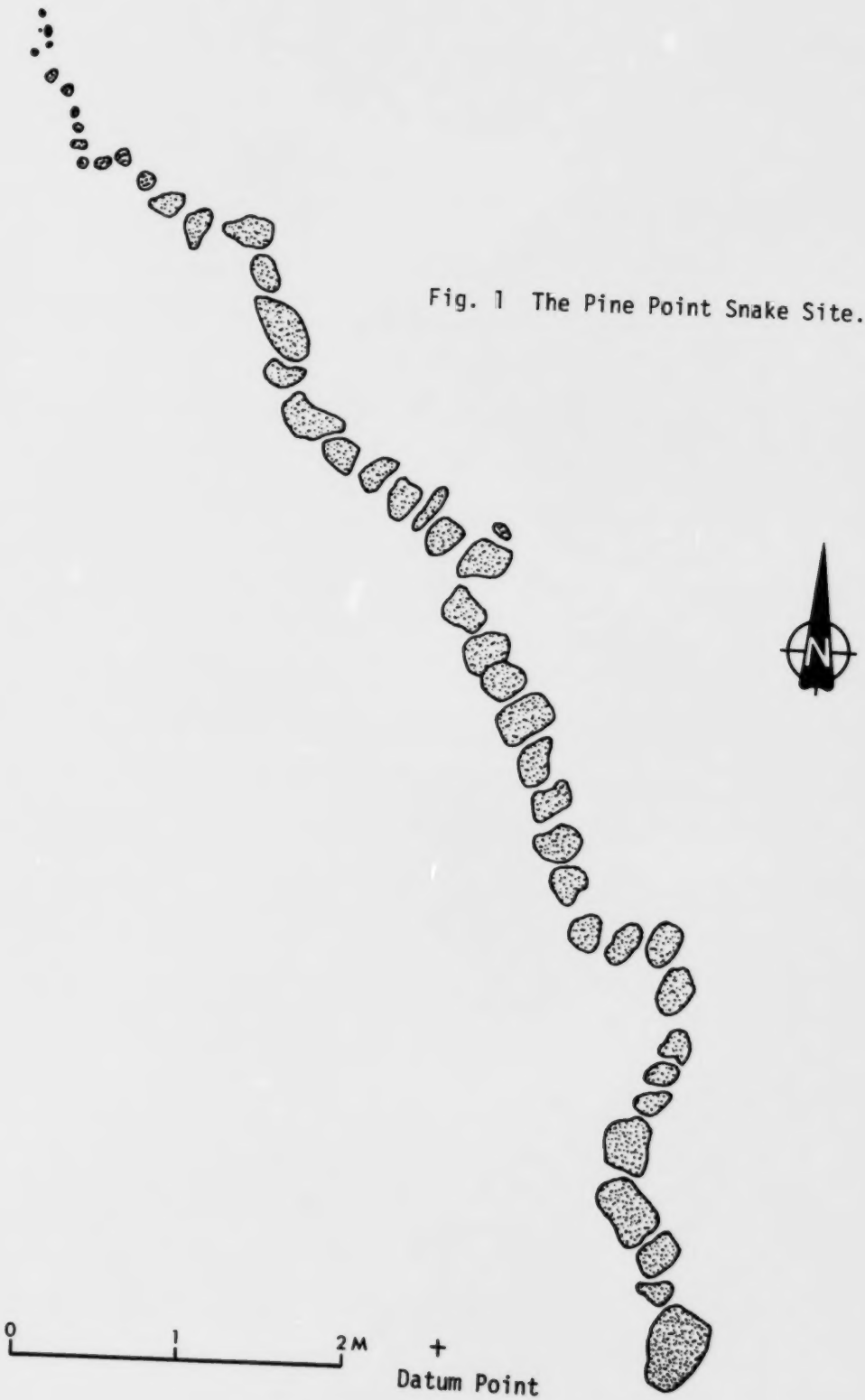


Fig. 1 The Pine Point Snake Site.

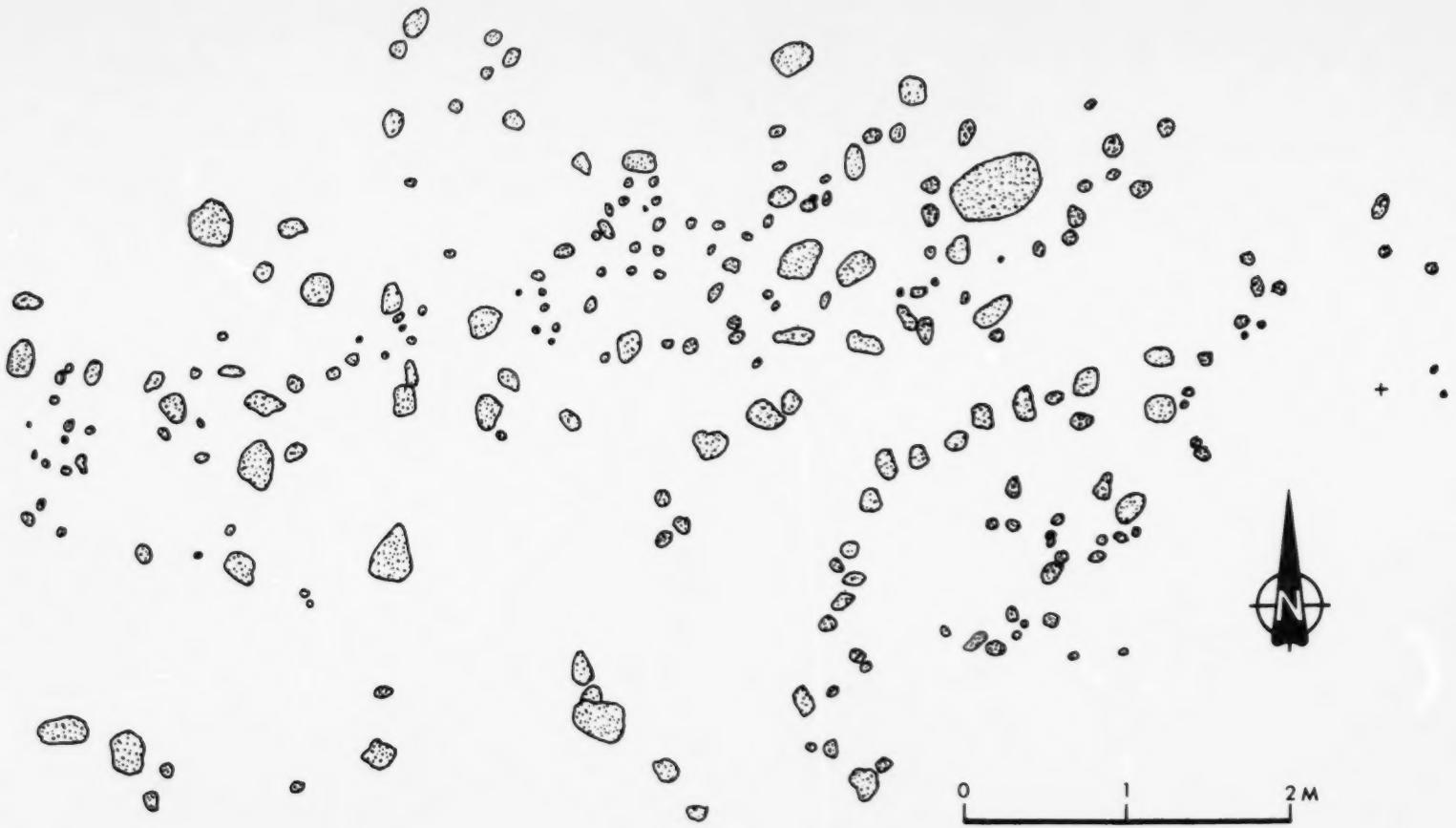


Fig. 2 The Astwood Site Feature #1.

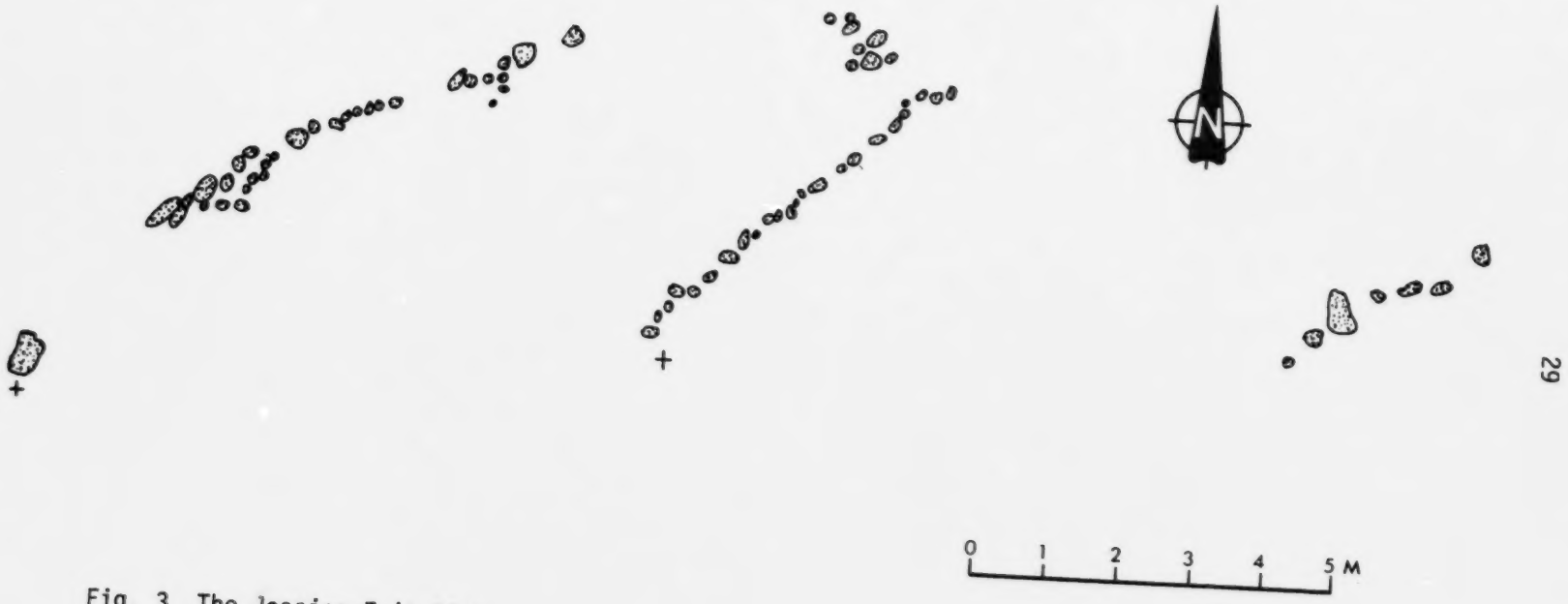


Fig. 3 The Jessica Exit Site.

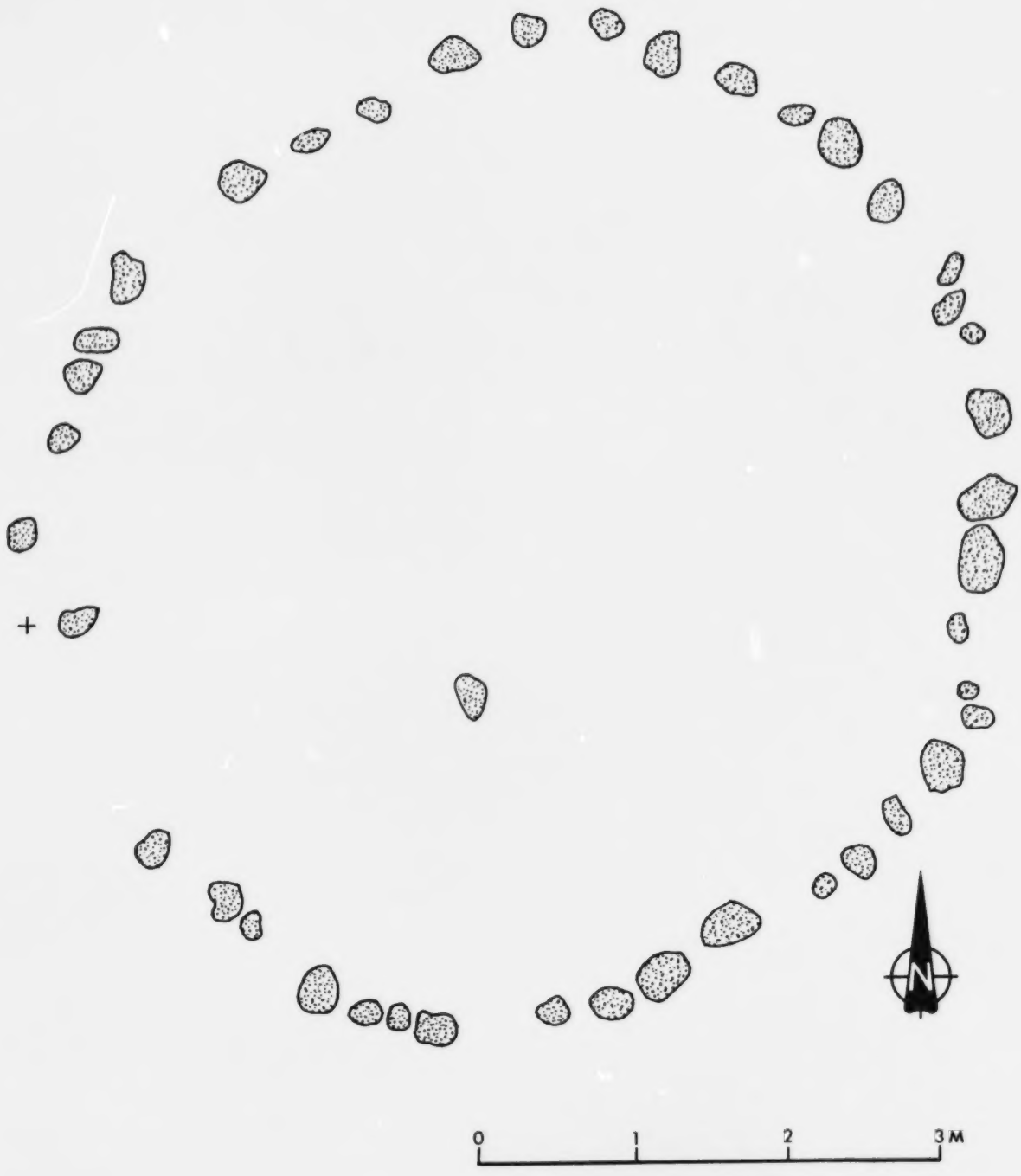


Fig. 4 The Scarfe Site Feature #1.

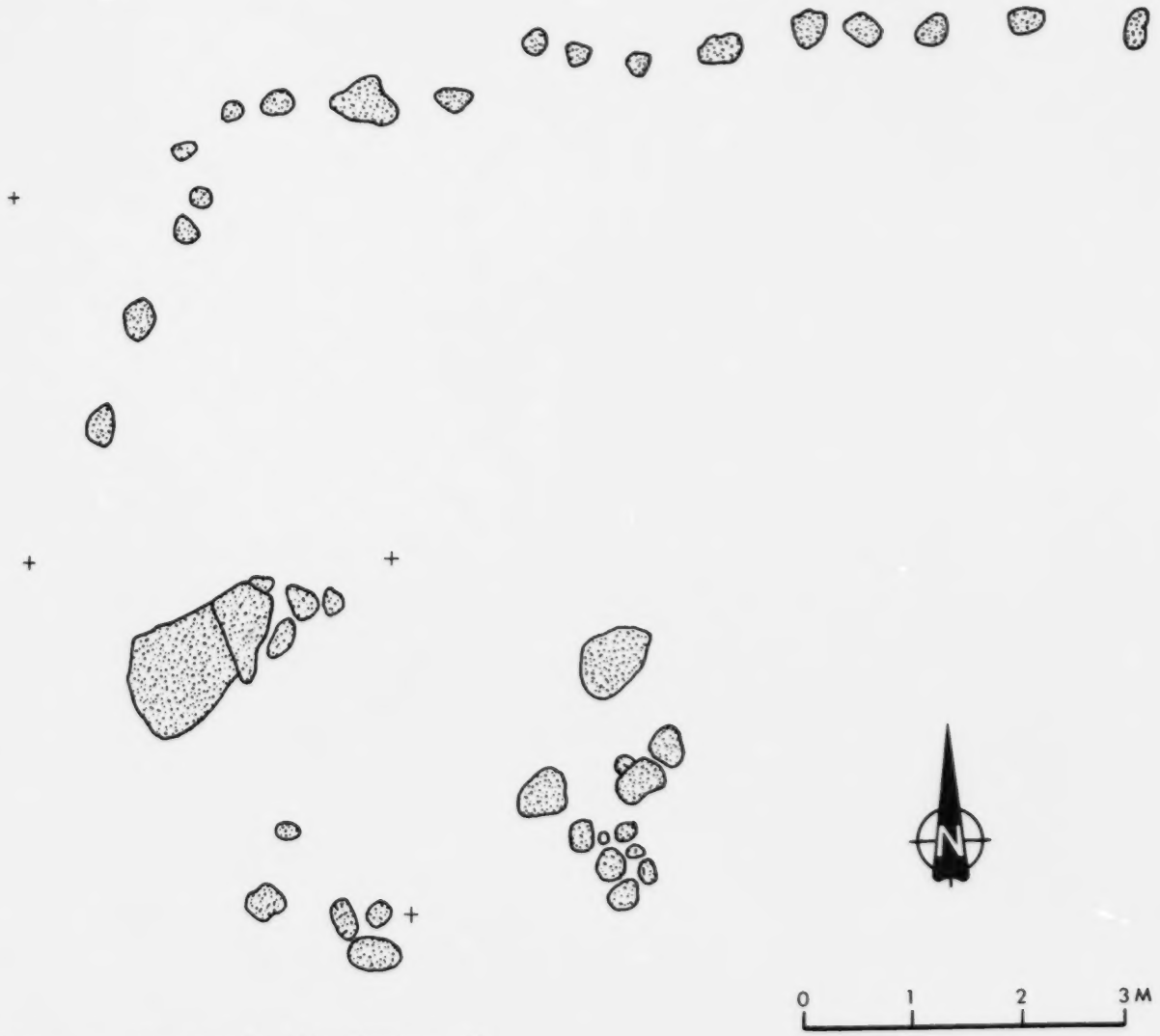


Fig. 5 The Scarfe Site Feature #2.

Fig. 6 The Mulloy Lake Site.

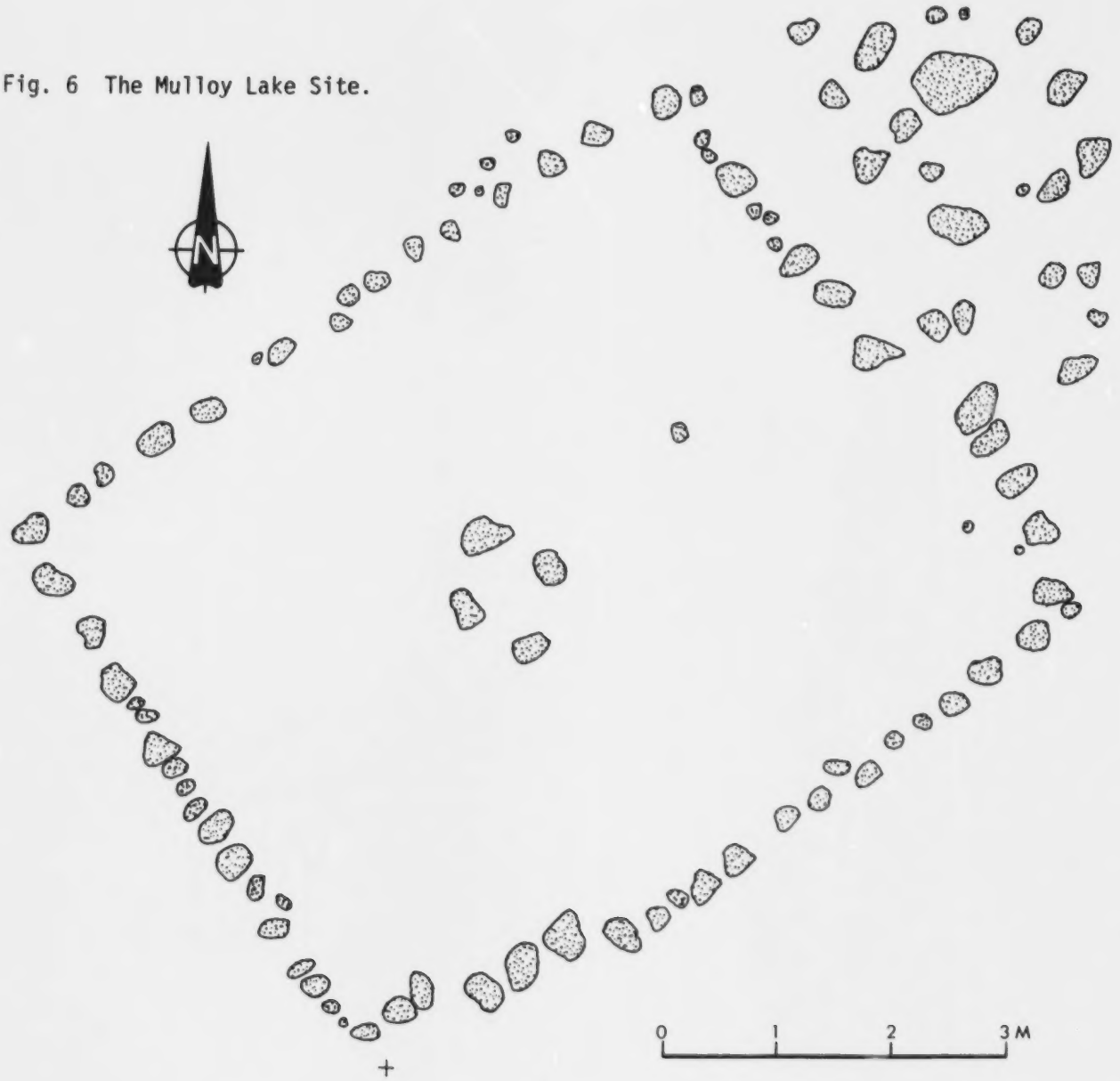
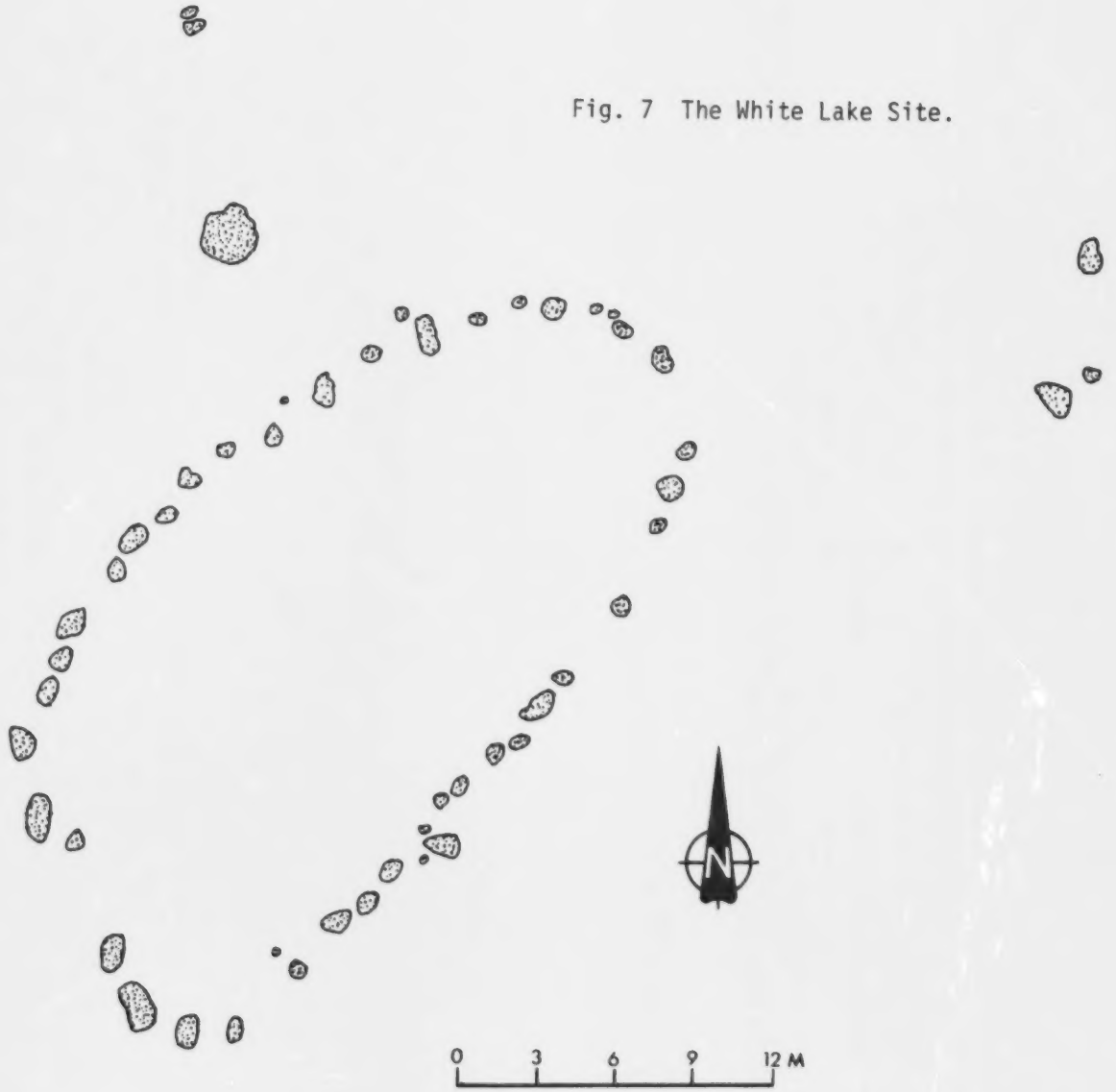


Fig. 7 The White Lake Site.



THE ASTWOOD SITE (EbKu-10):

A POSSIBLE ARCHAEOLOGICAL ASSOCIATION

FOR

EASTERN MANITOBA PETROFORMS*

by

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INTRODUCTION

The Astwood Habitation Site is located on a point on the east side of George Lake in the Whiteshell Provincial Park in Manitoba, Lat. N. 50° N. 15' Long. W. 95° 30' (Fig. 1). It occupies a central position on the Astwood Homestead which was established in the early 1900's. The homestead has since become a cabin site and is occupied by Mr. James Astwood, son of the homesteaders. The archaeological site is on a relatively flat lawn area northwest of the Astwood cottage, and is 200 yards north of a small stream which empties into George Lake from the east. This stream has its source in Forbes Lake.

The Astwood Site was originally referred to the Department of Anthropology, University of Winnipeg, by Mr. Wilfred Gratton. The referral, however, was on a set of large petroforms (EbKu-9) occupying the granitic outcroppings located about 300 yards inland between the stream and the George Lake shoreline (Fig. 2). The habitation site is the only one of its kind known in the vicinity and is conveniently located relative to the petroform site (Fig. 2). It is also located on the nearest available deep soil deposits, all else being barren granitic outcroppings.

Excavation of the site was undertaken with the expectation that it could form the archaeological counterpart of the petroforms, and yield information about the identity of the builders of these widely distributed boulder arrangements. The excavations were conducted by the University of Winnipeg under a grant from the Manitoba Parks Branch. The team consisted of Tony Buchner, Clint Wheeler, Richard Callaghan, Rae Crawford, and Judy Kolodka. The work was conducted during July and

August of 1973 (Buchner and Calaghan 1974).

EXCAVATIONS

A total of 23, 5' x 5' pits and 9 transectional trenches of varying dimensions were taken to sterile basement. The pits were staggered in a general grid to permit determination of sampling trends during the excavations. The pattern developed would appear representative, yielding an estimated 50% recovery, and indicating probable site parameters through gradual diminution of recovery.

The soil profile is uniform for the excavated area, exhibiting approximately 1" of unconsolidated grass root, humus, and leaf mold. Underlying the unconsolidated zone (which is sterile) is a medium brown, clayey loam with a liberal sand constituent. This zone, which varies in thickness from a minimum of 4" to a maximum of 13", yields all of the occupational debris. Average thickness is approximately 6", with 20 of the 23 squares falling between 6" and 8" for this measurement. The clayey loam occurs immediately upon a yellow lacustrine clay very similar to that occurring in excavations at the Bjorklund, Porth, and Whitemouth Falls Sites near Seven Sisters, Manitoba (Steinbring and Hammer 1972: 3). This clay is interpreted regionally as being of Agassiz II origin.

Bone recovery was extremely limited, probably owing at least in part to the acidic character of the Shield soils. Less than 50 grams of bone were obtained, far fewer than that needed for radiocarbon assay. Further excavations designed to produce bone and/or charcoal samples would be warranted (despite the high proportion of site coverage) because of the potential petroform association.

A total of 1,478 pottery sherds, including rims, was recovered in the excavations, and all but the bottommost (and isolated) stratigraphic positions yielded ceramics. The sample available is exclusively Laurel with Laurel Dentate and Pseudo-scallop Shell varieties predominating (Fig. 4). There are concentrations of these two varieties occurring at some distance from each other, but at the same levels. The densest accumulations of the Dentate variations occur in S17E2, while the Pseudo-scallop Shell forms occur mainly in squares S11 to 13, W4 to 6. These concentrations are approximately 30' apart in the excavation sector, which itself constitutes a space of roughly 50' in maximum diameter. These localizations suggest occupation differential within extremely limited time, but sharing fully in the Laurel ceramic tradition.

While the evidence is limited, it would appear (from a very few sherds) that Pseudo-scallop Shell has archaeological priority in the site. The efforts at reconstruction suggest that this variety was characterized by a rounded bottom and insloping rims (Fig. 4, Bottom), much like that reported by Janzen (1968 Plate V). The Dentate varieties, on the other hand, exhibit a conoidal base with slightly outflaring rim, exterior bosses, diagonal decorative alignments, and extensive rim punctating (Fig. 4, Top). Pseudo-scallop Shell variants exhibit no bossing, and have horizontal decorative alignments (with diagonal incisions at the lip). There are a few crudely incised specimens which may be aberrant. All of the body sherds recovered in the excavations are of medium thickness, and are smoothed. Differences in firing technique are evident between the Pseudo-scallop Shell and Dentate concentrations; the former is of a low firing temperature, producing a friable, granular condition. The latter is well fired, hard, darker

brown in color, and structurally much more compact.

The concentrations differ also in the character of fracturing, the Pseudo-scallop Shell variations being much more commonly coil-aligned. The Dentate materials exhibit more irregular fractures, with diagonal and vertical cracking quite common. The size of sherds varies greatly, with several hundred sherds of the Dentate concentration being smaller than the 15 mm exclusion factor. The Pseudo-scallop Shell concentration, accounting for only about one-tenth of the total Dentate recovery, offered less than ten sherds under this exclusion factor. Almost all of the Dentate sherds falling under the exclusion limit were recovered in a rather precisely demarcated concentration. The concentration appeared along a slightly curved line, becoming more diffuse toward the inside of the curvature. This is suggestive of floor maintenance ("housekeeping") in a lodge. There were, however, no signs of post-molds. The estimated size of the hypothesized "lodge" would be about 10' x 30'. The concentration is not broken at what would appear to be the eastern end.

The "Astwood type" (Fig. 5), which had been provisionally extablished through surface recoveries at the Astwood Site and confirmed in a comparable stratigraphic context at the Bjorklund Site (Fig. 1), was not in evidence at the Astwood excavations. The "type" (which is more likely a decorative variant) consists of a linear, horizontal-incised design around the shoulder and neck region of a smooth-surfaced vessel. The band of fine, spaced incisions is uniquely characterized by having a "Step". The sample is exceedingly limited and does not include rims. Prior to excavations at Bjorklund, the variation was known only from Astwood.

Preliminary conclusions based only upon pottery would entail, above all, the primary Laurel identification of the main site occupation. Further, this identification would appear to include two distinct ceramic varieties, suggesting either different groups at the same time, or two Laurel components slightly separated in time. The latter option appears to be the most probable, since Pseudo-scallop Shell specimens occur at deeper positions in the excavations. The priority of Pseudo-scallop Shell at Astwood would also tend to be supported by Wright's view (1967: 133) that the Pseudo-scallop Shell variation is an early Laurel form. The technological distinctions cited above might also be seen to support its archaeological priority. Just the same, an absence of any completely clear separation in the vertical distribution of both might preclude completely different temporal assignments. The chance exists that vertical displacement of Pseudo-scallop Shell may have occurred as a result of disturbance. Such, however, was not noted in the profiles, nor observed by the excavators who were all well-trained and experienced. The conclusion of historical separation would also not be supported sufficiently by the lithic assemblage.

Lithic recoveries at the Astwood Site, comprising 474 specimens altogether, include very few diagnostic entities. There are only two classifiable projectile points, one biface, a preform, two side scrapers, an end scraper, several retouched flake scrapers, 2 choppers, an adze bit, a half dozen core fragments, one "bell-shaped pestle", 200 waste flakes, and only one concentration of fire-cracked rocks (Fig. 7).

The materials utilized in lithic manufactures are exclusively regional in occurrence. A mineralogical assessment of the inventory reveals no materials of an exotic character. Vein quartz and a black

rhyolite porphyry constitute the great majority of types exploited (over 90%). The porphyry (or andesite in some cases) is the preferred material throughout the range of occupation. Vein quartz is also distributed uniformly from the bottom to the top of the occupation zone, and is only slightly less important numerically than the rhyolite. The rhyolite tends to be a dark black in color with white impurities, while the quartz is mainly white, usually with a violet tinge. It is interesting to observe that the only two classifiable projectile points, which are also among the deepest recoveries at the site, represent both mineralogical variations. A Raddatz Side-Notched point (Ritzenthaler 1967: 24) is made from the black rhyolite, and a Parkdale-Eared point (MacNeish 1958: 100) is made from local quartz (Fig. 7). These specimens appear to occupy a very thin preceramic component in the site, and have a contemporary association at other regional sites, such as Whitemouth Falls (Hlady 1970: 275-276) and Cemetery Point (MacNeish 1958: 28). Both of these types are known only from Archaic contexts elsewhere. It is of interest to further note that these specimens constitute (with the possible exception of a few scrapers) the only direct technological evidence for hunting at the Astwood Site.

The presence of chipped adzes and the bell-shaped pestle, along with longitudinally-oriented bilateral side scrapers, tends to suggest the possibility of continuity for an Archaic lithic tradition, but without polished and ground stone artifacts. The lithic resource exploitation at Astwood also closely parallels that of the preceramic components at Whitemouth Falls and Bjorklund. At these regional sites, the ceramic period finds an abrupt increase in exotic materials, reflecting trade or higher mobility of contemporary cultures. The near absence of fire-broken rock is itself impressive. This is in sharp contrast to most other deep

regional sites. Only one concentration of fragments was recovered, while literally thousands are recoverable throughout sites like Whitemouth and Bjorklund. This may then lead us to general interpretations of the Astwood Site.

CONCLUSIONS

CONCLUSIONS

The proximity of the above-described occupation site to the Astwood petroforms has promoted an hypothesis of association. This was strengthened by the absence of any other nearby sites, and the fact that the Astwood habitation site occupied the nearest soil deposits to the boulder component. A distance of less than 100 yards may separate the peripheries of the habitation area and the rock formation upon which the petroforms are immediately situated. Further, there is direct access to the boulder arrangements from the occupation area, and none from any other advantageous location. The only presently known route from George Lake to the petroforms would require passing through the area encompassed by the Astwood habitation site.

The near-absence of fire-cracked rocks, in contrast with other contemporary deep stations, suggests a very transient character for site utilization. While spatial distributions might influence recovery for such a trait, the comprehensive grid and wide sampling should preclude this alternative. The absence of hunting equipment in the main occupation zone would tend to greatly limit the chance that the site was used in fall or winter, the prime hunting times. The overwhelming preponderance of ceramic debris

in the artifact inventory suggest times of occupation during which plant-collecting activities might predominate in the economic activity. This would coincide with the normal summer formation of aggregates known ethnologically (Hallowell 1955: 119). The "point" position of the site corresponds with fishing stations throughout the late Archaic and Laurel sites of the Upper Great Lakes (Janzen 1968: 100-103). Since summer aggregates characteristically formed the basis of group ceremonialism in this region (Hallowell 1936), the Astwood occupations may well have been centered at the adjacent petroforms. Summer would also be the time for medicinal plant-collecting, and an association between this activity and magico-religious ceremony is commonplace in eastern Woodlands ethnology (Smith 1923: 43). The adzes and choppers, which are best interpreted as woodworking equipment, would also more commonly find expression in non-winter occupations. Buchner's analysis of potential astronomical alignments for Whiteshell petroforms (1974) suggests that the Astwood (and other) orientations would best relate to the summer solstice.

The overall impression conveyed by our present state of knowledge is that people of the Laurel Tradition occupied the Astwood site transiently over several centuries for the purpose of ceremonial visitations to the Astwood petroforms. There is some reason to believe that these people shared in a more ancient regional tradition known as the Shield Archaic (Wright 1970: 44), but in time adopted a ceramic technology of southern origin. Since no extensive ceremonialism is in evidence for regional Archaic manifestations, it seems likely that this social phenomenon may be linked to the adhesion of Laurel ceramics. Laurel pottery is of Middle Woodland inspiration in the southern Great Lakes area (Mason 1969: 301, Stoltman 1973: 122), and would thus be associated

indirectly with the profoundly ceremonial Hopewell Culture, with its complex funerary ritual, mound construction, great symbolism, and exotic resource exploitation as afforded by wide trade networks (Griffin 1952: 360). In this regard it is worth noting that Laurel pottery at Bjorklund and Whitemouth Falls is associated with obsidian -- a major trade item for Hopewell, but which is absent in other Woodland cultures of the Canadian Great Lakes watershed. The two main varieties of Laurel pottery at Astwood conform to types within the Laurel Plain Ware (MacNeish 1958: 142). Both also resemble the Laurel Dentate and Lockport Linear types recovered by Kenyon as part of the fill at the Armstrong Mound on the Rainy River (Kenyon 1970: 78, 82). It would appear that Kenyon's sherds substantially antedate the mound construction, which is radiocarbon-dated at 1,010 ± 100 B.P., or A.D. 957. The presence of a platform pipe, carved stone effigy, and Snyder's points make at least terminal Hopewell affiliation very probable for the mound itself. A much earlier date for Astwood would be reasoned on the grounds of Wright's general finding that the Pseudo-scallop Shell decorative technique is the earliest in the Laurel Tradition (1967: 121). The Donaldson Site in Ontario, which has this type in abundance, has yielded a date of 500 B.C., only about 200 years later than the earliest Minnesota Laurel date of 775 B.C. Morgan Tamplin (1973) has recently dated the type at about A.D. 1 in his The Pas, Manitoba, excavations.

The work of Allen Tyyska at the Palframan sites on the Mattawa River in Ontario (1973: 9, 17) reveals massive architectural structures created in stone by an unknown prehistoric culture. Nearby habitation sites yield Middle and Late Woodland components. Certainly, the probability of a Middle Woodland assignment, with its advanced ceremonialism,

would be strengthened by the Astwood data.

The apparent continuity of preceramic-ceramic occupations at Astwood might also suggest an early position in Laurel chronology. A tentative time for Astwood occupations is set at 500 B.C. to the time of Christ. This range, then, should also accommodate the construction, use, and probable modification of the Astwood petroforms. Since no regional clues are yet available for the specific dating of other Manitoba petroform sites, these dates are also suggested for at least the Tie Creek Site (see Figures 1 through 8). The applicability to Tie Creek, largest and most complex of these North American phenomena, is based upon the fact that it would be directly connected by water to the Astwood Site, given a regional water level rise of only 5 feet (Steinbring 1970: 264-265). The period suggested for site development was probably wetter than it is today, since numerous regional muskegs now represent the remains of earlier water bodies.

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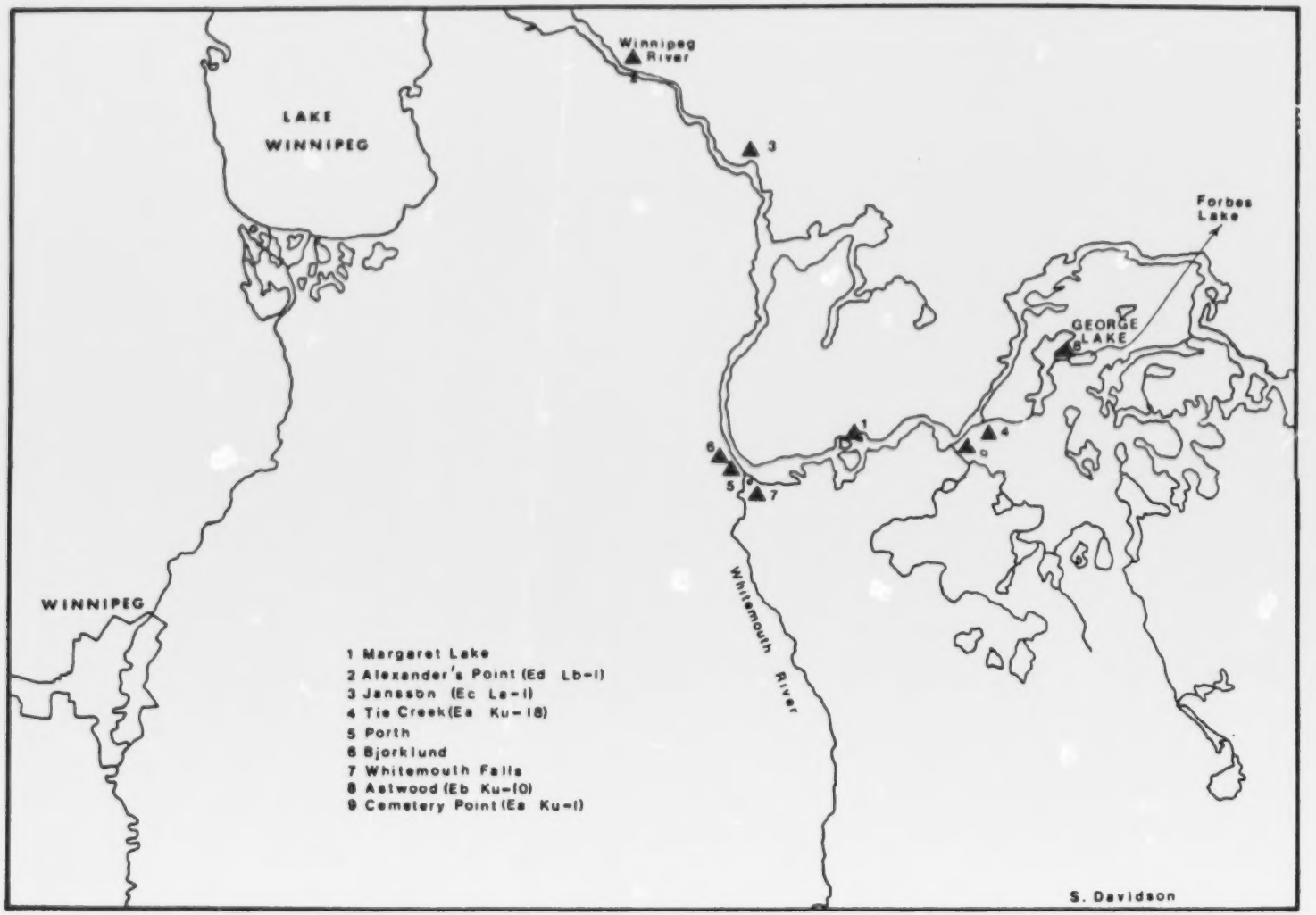

Fig. 1. Regional map showing the location of the Astwood Site and related sites considered in this paper. Drafting by Sally Davidson.

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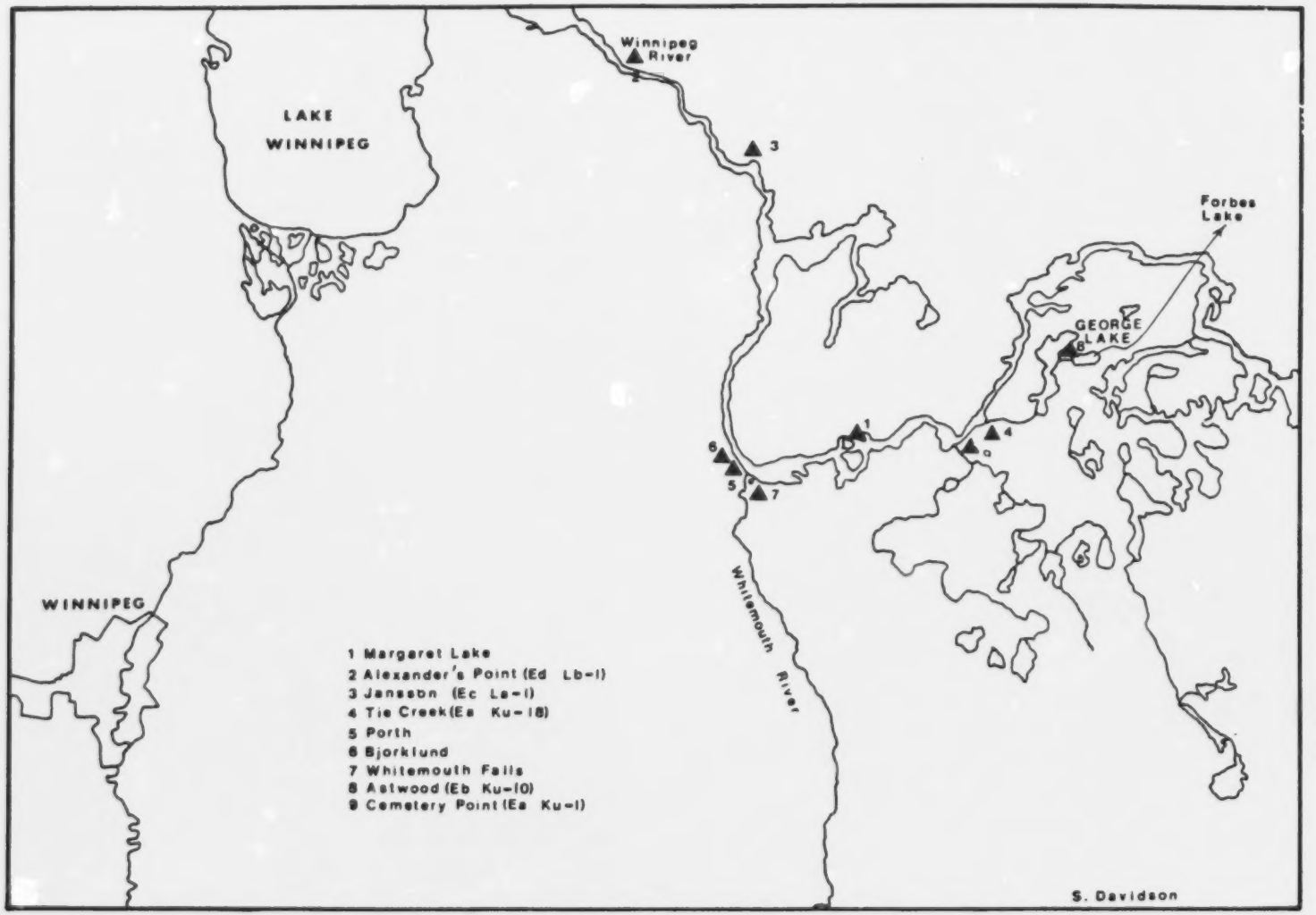


Fig. 1. Regional map showing the location of the Astwood Site and related sites considered in this paper. Drafting by Sally Davidson.

KEY

Fig. 2. Area of the Astwood Site on George Lake, showing petroform locations, occupation area, and surrounding natural environment. North is toward the left hand side of the page. Drafting by Richard Callaghan

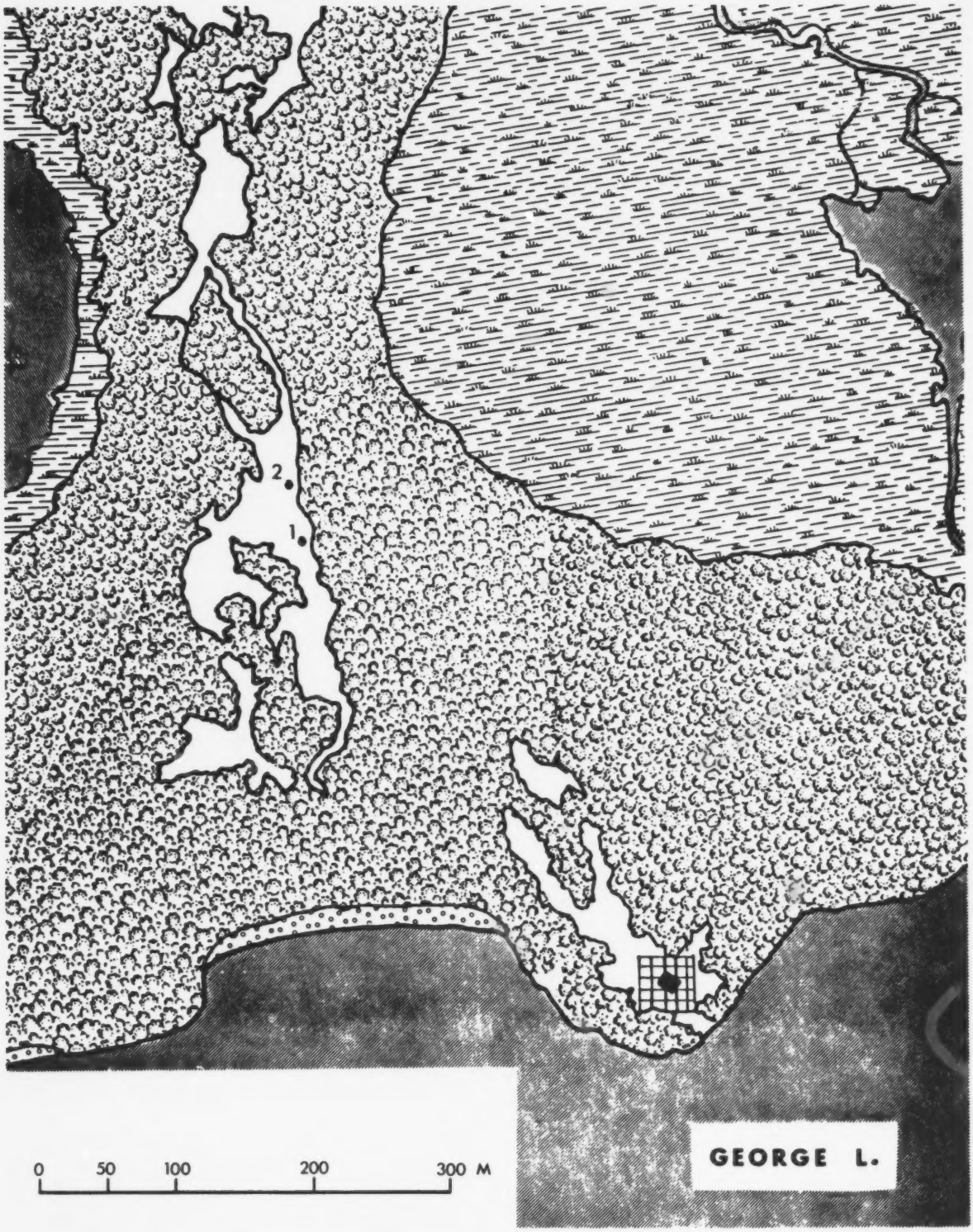


Fig. 2.

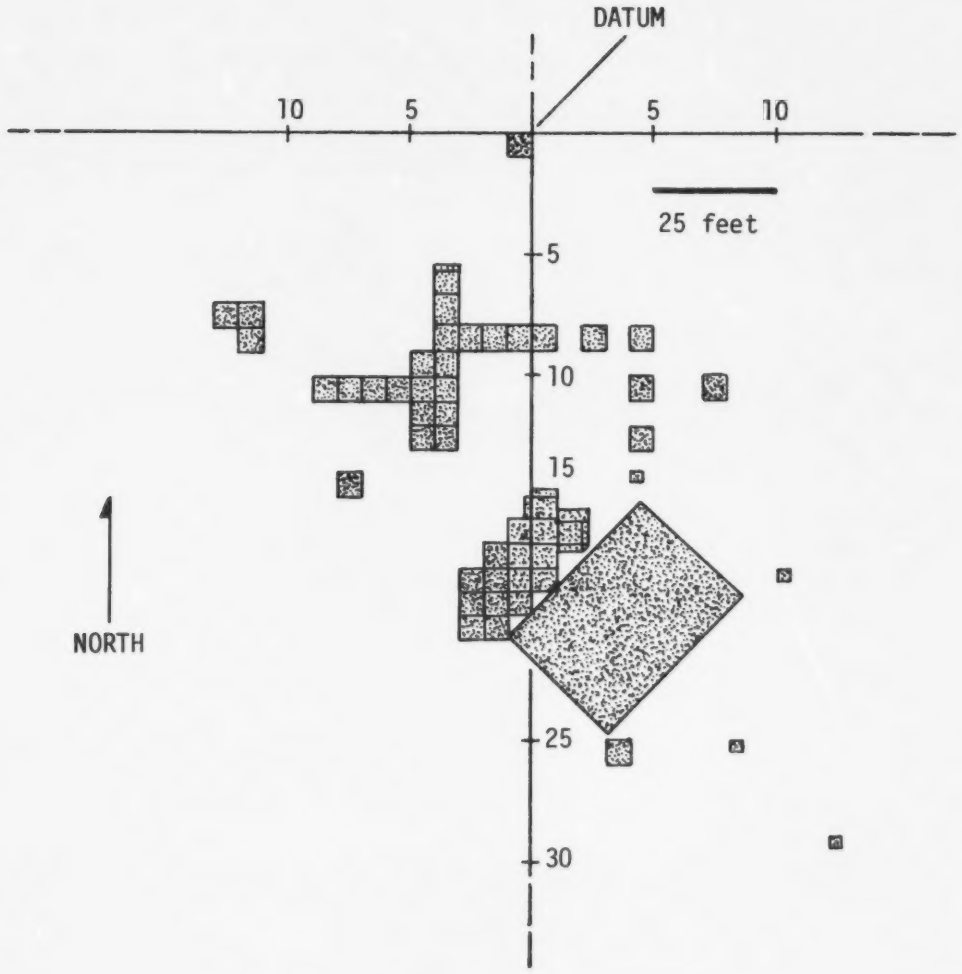
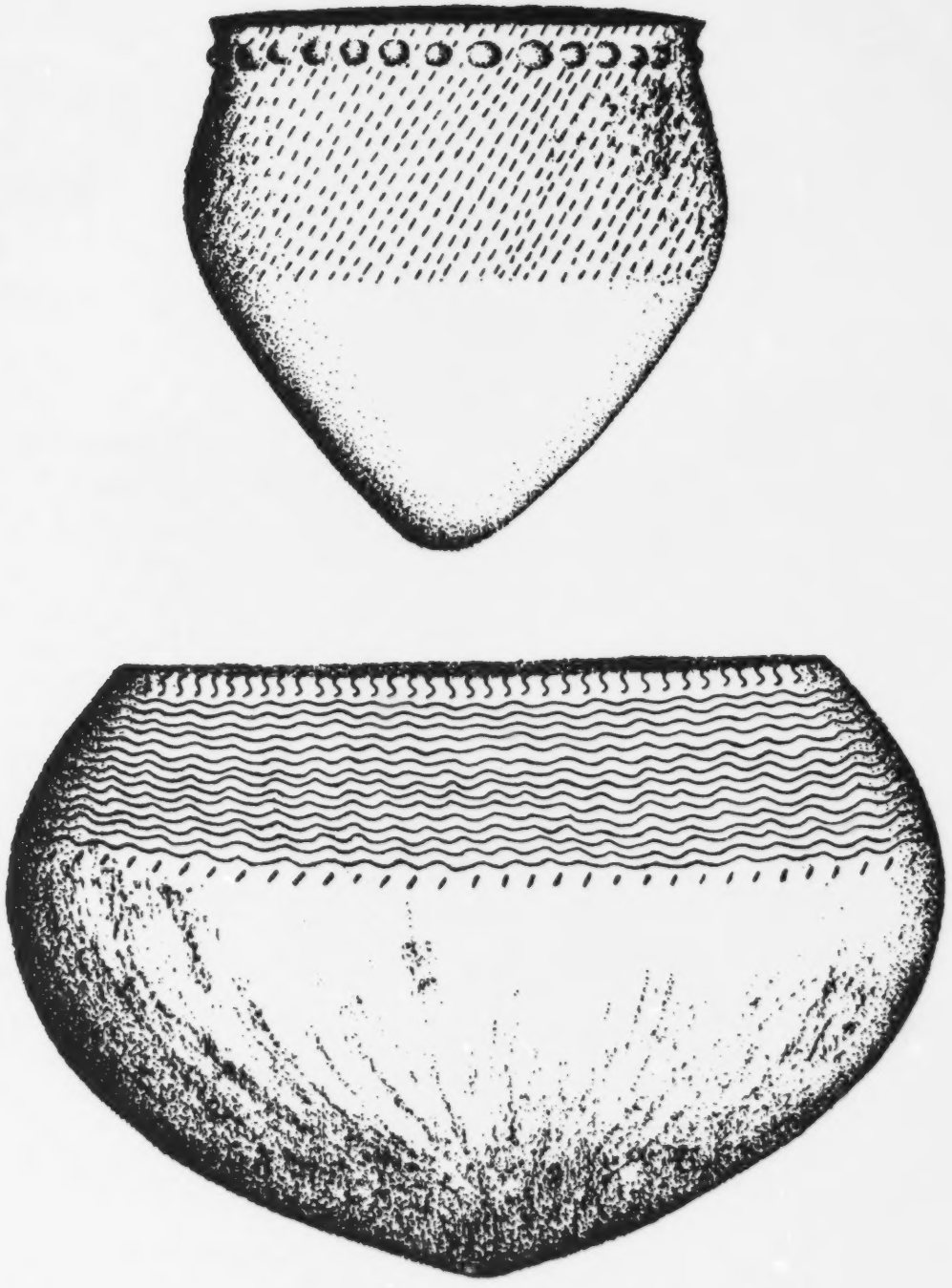


Fig. 3. Excavations plan, Astwood Site. Square designations are determined by axial baselines. Unit S20 E9 would be 20 five-foot squares south of the E-W baseline (at top of map) and 9 squares east of the N-S baseline (centre of map. Adapted from the original field map prepared by A.P. Buchner.



Scale 0.5 cm.=1.0 cm.

Fig. 4. Reconstructed vessels from the Astwood Habitation Site. Above: Dentated vessel; below: Pseudo-scallop shell vessel. Drawings by Sandi Varo.

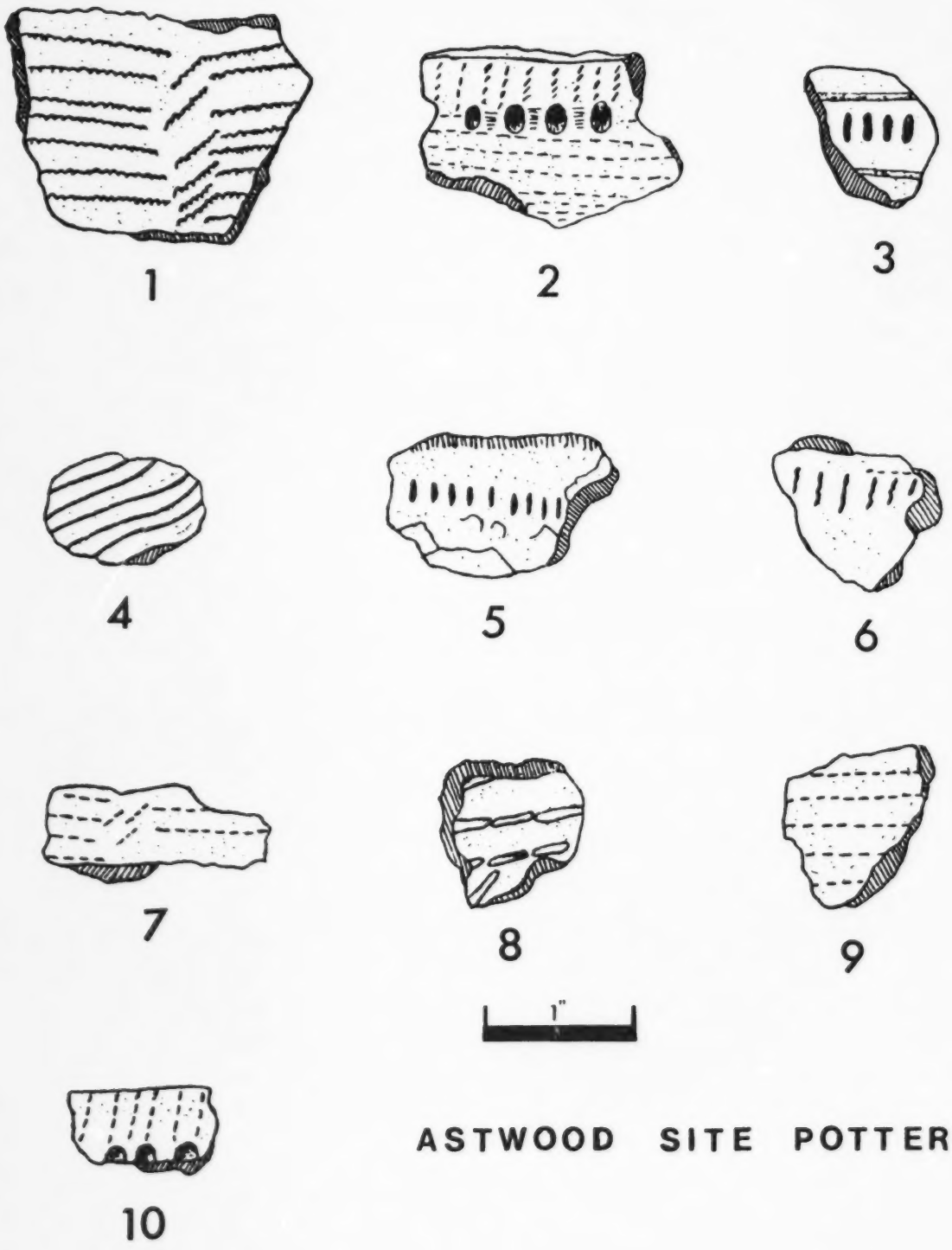


Fig. 5. Surface pottery from the Astwood Site. Specimen numbers 1 and 7 represent the "Astwood Type". Drawings by Sally Davidson.

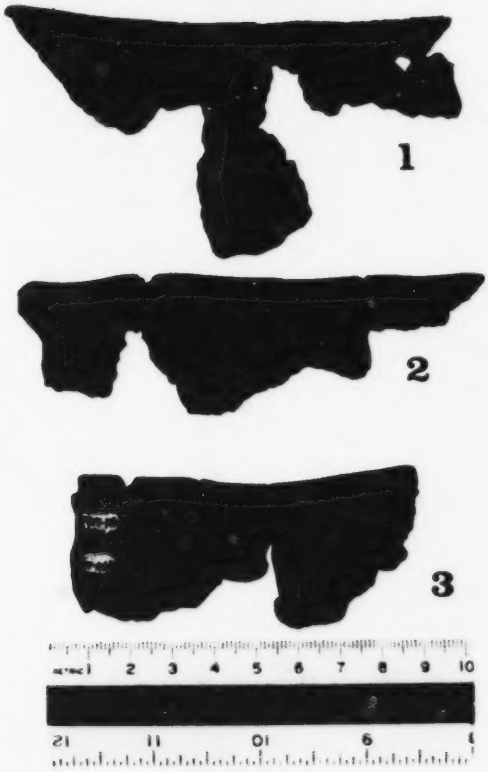


Fig. 6. Reconstructed rim portions of Laurel pottery from the Astwood Site. 1: Laurel Dentate with external bosses; 2: externally-punctated variation of Laurel Dentate; 3: Laurel Ware with diagonal incisions and circular punctates.

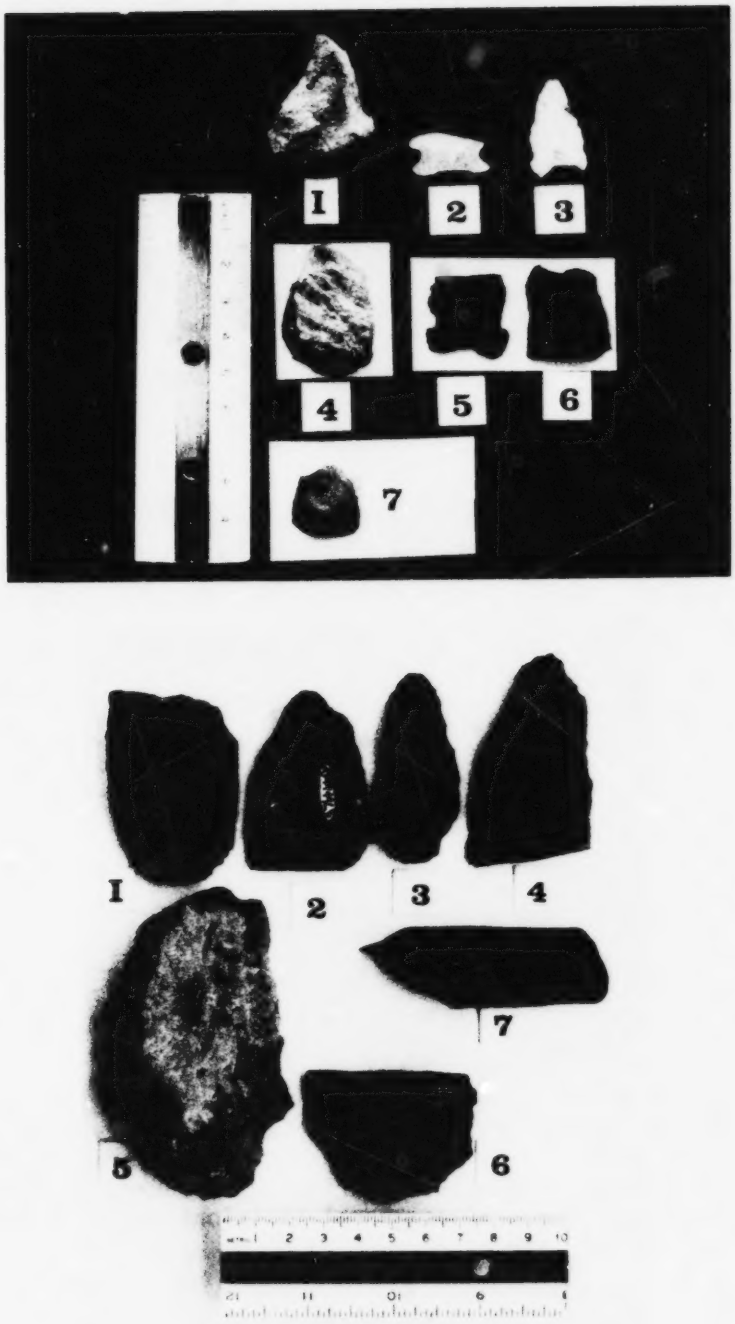


Fig. 7. (Top): Finished chipped stone artifacts from the Astwood Site. 1, 7: end-scrapers; 6: bilaterally-edged side-scraper; 2, 5: side-notched projectile points, Raddatz type; 3: Parkdale-eared projectile point; 4: reworked knife.
(Bottom): Coarse chipped and polished stone work from the Astwood Site. 1-4: bifaces; 5,6: adzes; 7: fragment of ground and polished slate rod.

THE SOUTHEASTERN MANITOBA PETROFORMS: ASSESSMENT OF AN EXPANDED SAMPLE

by

E. Danziger
and
R.T. Callaghan

ACKNOWLEDGEMENTS

Several people contributed significantly to the production of this report. First, we would like to thank Steve Lundin without whose energy and enthusiasm in the field, the survey would have been far less successful. Secondly, many people provided leads to petroform locations and advice on local terrain during the field season. These are Willard Anderson, Charlie Clark, Bernard French and Terry Howe. Dr. A.P. Buchner allowed us the use of his personal files on petroforms and offered much useful advice. Finally, we wish to dedicate this work to Dr. J. Steinbring of the University of Winnipeg. Dr. Steinbring has expended much energy in the field of Manitoba Rock Art. Over the last two decades, Dr. Steinbring has collected copious notes on petroforms in Manitoba, and to these he allowed us free access. For this we are particularly grateful, as no assessment of southeastern Manitoba petroforms would have been otherwise possible.

INTRODUCTION

RATIONALE

The main objective of the 1982 Whiteshell Archaeological Project (Fig. 1) was to investigate rock art in that area of Manitoba. Two of the three recognized media of rock art, pictographs and petroglyphs, are conspicuously absent from the region. Accordingly, the project concentrated on petroforms, although a search was also made for other types of rock art.

Some definition of what is meant by the terms "pictograph", "petroglyph" and "petroform" is perhaps in order. "Pictographs" are paintings on rock surfaces; "petroglyphs" are carvings in the rock. "Petroform", as defined by Steinbring (1970), refers to "things formed through the arrangement of stones". This broad definition is usually restricted somewhat in practice. "Petroform" as used in this report has the more specific definition given by Buchner and Callaghan (1980):

> "Petroform" may be defined as a prehistoric feature formed by the placement (not piling) of stones so as to create the outline of a figure. Piled features, such as cairns and stone ovens, are not included, as those which are reliably dated (by both dendrochronology and informant testimony) are not prehistoric. A specific type of piled feature of presumed prehistoric age, the "Thunderbird's Nest" is also morphologically divergent from petroforms per se as herein defined (cf. Carmichael 1979), and display a number of other rather distinctive elements .... Tipi rings, while fulfilling the morphological requirements of petroforms, are not included in this category, because in terms of their function and distribution, they are readily distinguishable from other petroforms as the term is currently used. It is felt that the definition is of maximum utility when used in its narrowest sense.

Fig. 1 Map of the Provincial Parks in Manitoba.

Petroforms are probably the most fragile and easily destroyed components of Manitoba's prehistoric heritage. Since they are simply boulders placed on top of relatively smooth rock outcrops with no anchor, they are subject to much disturbance. Careless hikers (see Buchner 1976a), snowmobiles, all-terrain vehicles, and even large animals are all major causes of destruction. Petroforms are also one of the most difficult archaeological phenomena from which to derive interpretive information. There are no Native informants available to explain who the builders were, no soil deposits with cultural remains attributable to a specific people or time, nor are there organic remains which could be dated. The only direct evidence for the antiquity of petroforms is the extremely slow-growing lichen on the rocks themselves. Lichenometric studies may eventually be conducted that will give an approximate age, but the lichens are almost as subject to damage as the petroforms. It is possible that in the future other techniques useful in dating petroforms will be developed. Certain types of chemical analysis seem likely candidates for development, but the petroforms will have to survive if such methods are to be of use.

At present, the most fruitful avenues of analysis are those that investigate the distribution, location, and orientation of the various types of features. For these studies, detailed maps are essential. Several petroforms have been destroyed before any of the above attributes could be considered. If these are simply left out of account in the analysis, severe distortion will result unless a larger sample is obtained.

From the standpoint of resource management and the preservation of Manitoba's past, equally detailed maps are necessary. Unless the locations of features are documented, development that would endanger them cannot be redirected. Without detailed maps, features cannot be reconstructed once disturbed. Maps of petroforms could function just as do old photographs and drawings in the reconstruction of historic buildings.

The 1982 Whiteshell Archaeological Project was established to record in detail petroforms not so documented, and to check the condition of previously documented sites. Next, all unconfirmed leads to possible petroform sites were to be investigated. Finally, time permitting, areas suspected to contain petroform sites would be surveyed.

Many, including the authors, have considered that a survey without reliable leads would be very unproductive in terms of time and effort expended. However, early in the season the not entirely original idea (Sutton 1965; A. Simpson, pers. comm.) that at least some types of features functioned as directional markers for an overland route between lakes was used as a working hypothesis to predict locations. This quickly proved to be a successful strategy and, as a result, the survey component was given priority. By the end of the field season, the number of documented sites had been approximately doubled, with about 75% of the new features located through the use of this working hypothesis. It must be pointed out that this hypothesis was not considered to be a true reflection of all functions of the petroforms but only as a useful tool for locating them.

BACKGROUND

Petroforms have been noted in Southeastern Manitoba since the days of the fur trade at least 200 years ago. Alexander MacKenzie (1927:66) briefly mentions petroforms and their use in the Lac du Bonnet area:

> Here the Pinnawas road joins, and from thence it is two miles to the Galet du Lac du Bonnet; from this to the Galet du Bonnet one mile and an half; thence to the Portage of the same name is three miles. This portage derives its name from the custom the Indians have of crowning stones laid in a circle on the highest rock in the portage, with wreaths of herbage and branches...

MacKenzie does not make it clear whether or not he personally observed this practice, but if he did, it must have been prior to June of 1789 when he left Fort Chipewyan on his voyage through the Continent.

The first investigations of Whiteshell petroforms seem to have been those conducted in September of 1934, as cited in Sutton (1965) and Steinbring (1970). The now-destroyed Bannock Point Site and the Tie Creek Site (then called the "Ten-acre Site") were the objects of investigation. The photographs and maps made at the time have proved essential in evaluating subsequent disturbances, especially in the case of the Tie Creek Site.

Observation of petroforms in the Whiteshell area continued in the 1940s and '50s. Some investigators gave only verbal descriptions with no indication of location (Leechman 1949); others gave maps of features and made attempts to link sites to particular cultures (Hlady 1950).

Because of differences in recording techniques and multiple reports of single sites, one receives the impression from the literature of the day that many more features existed than Sutton's (1965) publication indicated. Though rumours were abundant (in 1950 Hlady [1950:3] had reports of "almost one hundred other outlines"), confirmed sites numbered only five. Four sites were listed by Sutton (1965) and one by Hlady (1964); see Fig. 2. The Basket Falls/Rainbow Falls area became a particular problem. No accurate locations for the features in this area existed.

In 1968, the first attempts at dating petroform sites other than by proximity to habitation loci were undertaken by Douglas Elias and William Alton of the University of Winnipeg (Steinbring 1970). The investigations were of a preliminary nature, simply locating areas at the Tie Creek Site suitable for lichenometric dating. Also included in the investigations was a survey of habitation sites on Namao Lake about 2.7 km to the north. At this time, it was suggested that studies of astronomical correlations of features be undertaken as well.

Steinbring (1970), in his report on the Tie Creek Site, reviews the ethnographic literature concerning petroforms. Most of this information deals with groups to the south and west of the Whiteshell area. Only two reports are cited from southeastern Manitoba, of which the above-mentioned reference by Alexander MacKenzie is one. A report given by Mr. Frank Hall in 1960 (cited in Steinbring 1970) at the opening of the Nutimik Museum contained references to possible Ojibwa use of petroforms in Manitoba.

A paper written by C.J. Wheeler (1972) on file with the

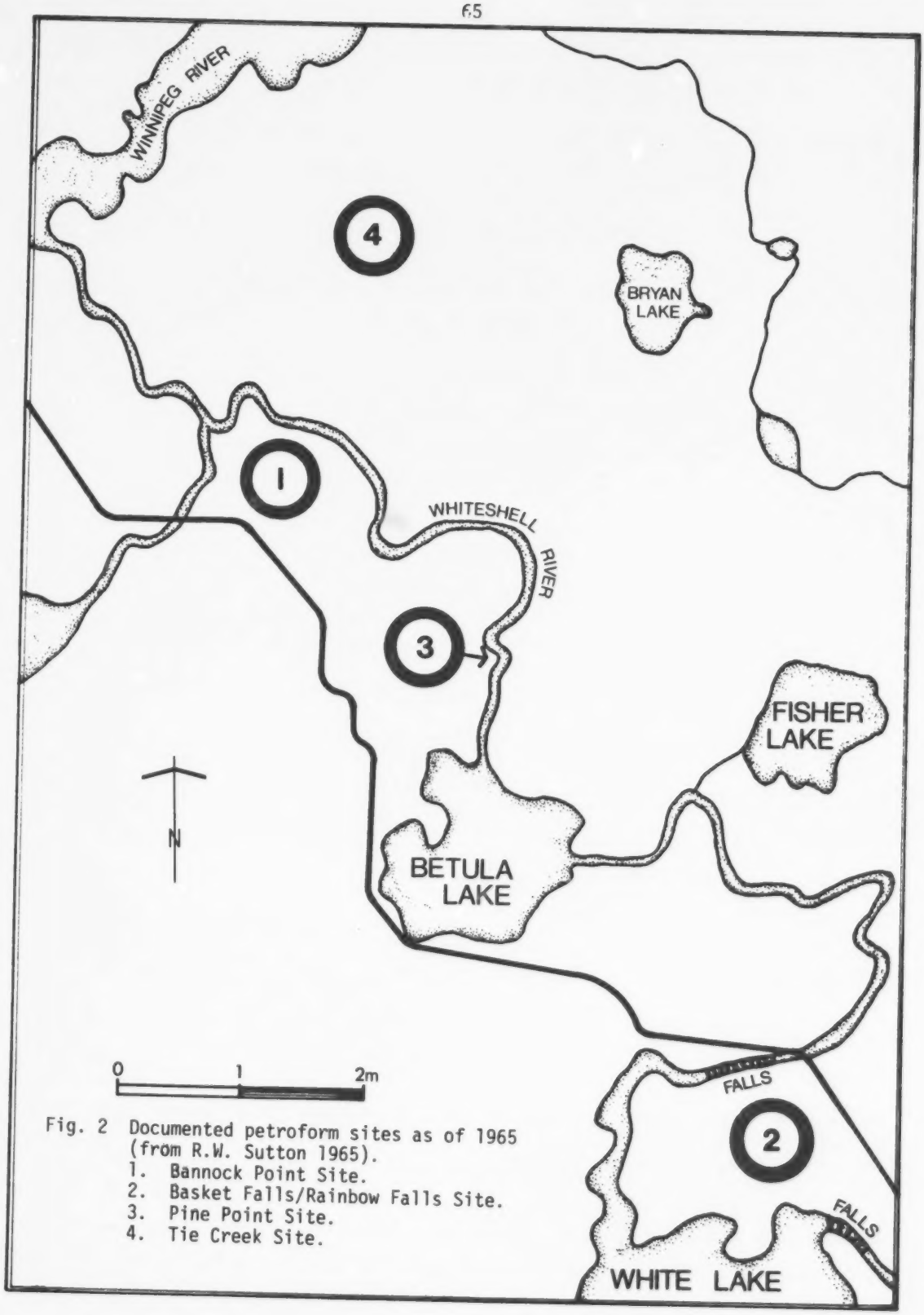


Fig. 2 Documented petroform sites as of 1965 (from R.W. Sutton 1965).
1. Bannock Point Site.
2. Basket Falls/Rainbow Falls Site.
3. Pine Point Site.
4. Tie Creek Site.

Manitoba Department of Cultural Affairs and Historical Resources, assesses the possible cultural affiliations of petroforms from an ethnohistoric perspective. This is the most complete assessment available. Wheeler concludes that while we cannot assign a date to the Whiteshell petroform phenomena, we can be reasonably certain that they are part of Algonkian culture. He discounts Hlady's (1950) view that the Assiniboine could be the builders, and gives good evidence for this. In concluding, Wheeler suggests that dates of petroform construction may be earlier than those proposed by other researchers (e.g., Hlady 1950; Sutton 1965). His suggestion rests on the discovery of what promised to be a single component Laurel site in proximity to two petroforms on the Astwood property on George Lake.

During the 1973 and 1974 field seasons, the Astwood habitation site was excavated by crews from the University of Winnipeg funded by the Manitoba Government (Buchner and Callaghan 1980). Detailed maps of Tie Creek, Astwood and other petroform sites (Buchner 1976a, b; see Fig. 3, this paper) were made. Subsequently, Buchner (1976b) undertook archaeo-astronomical investigations of the increased sample. In 1980, Steinbring published a review of what was known of the Whiteshell petroforms. Here, he included not only the documented sites, but many unofficially reported ones as well. Dr. Steinbring kindly allowed the members of the 1982 project access to his personal notes collected over the years. These notes comprised the bulk of site leads investigated in 1982.

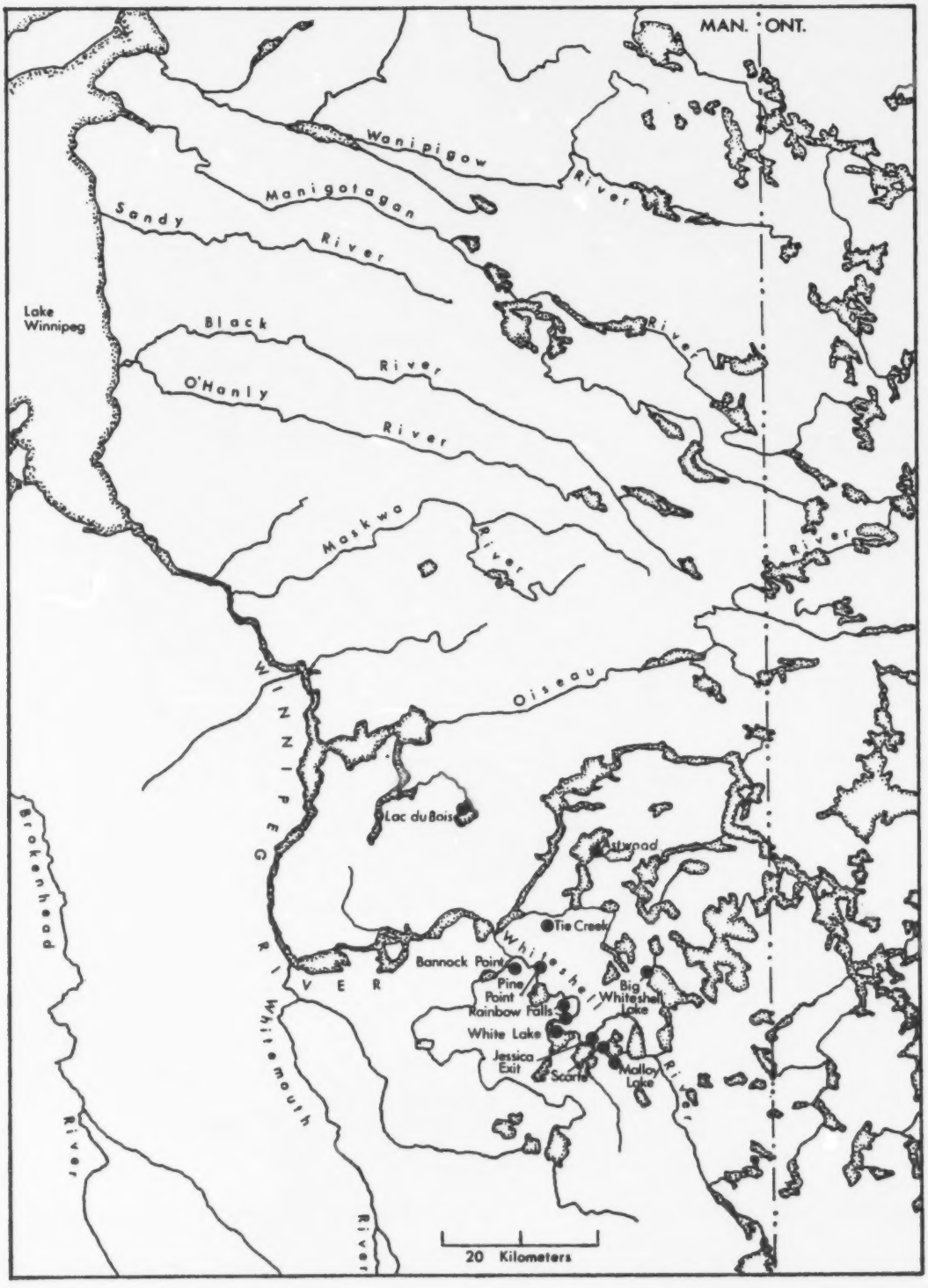


Fig. 3 Distribution of Recorded Petroform Sites as of 1980 (from A.P. Buchner and R.T. Callaghan 1980).

MAPPING METHODS

Various ways of mapping petroforms have been used over the years. These methods have ranged through simple sketching sometimes augmented by the use of measuring tapes, to the "reticule method" developed by L. Bayrock (Wormingtion and Forbis 1965) and used by A.P. Buchner (1976b) in mapping the Tie Creek Site. The reticule method is the most satisfactory means of recording petroform sites from the standpoints both of archaeological interpretation and of resource management. Reticule mapping also eliminates differences caused by variation in the artistic abilities of the recorders.

The recticule (Fig. 4) used by Buchner was a collapsible wooden frame measuring 10' x 10' with a gridwork of strings set at 1-foot intervals. Self-levelling legs on the reticule allowed maximum reduction of parallax distortion when drawing the individual components of the features. The reticule was sighted into place with a transit so that a grid-map of the entire site could be made. Such a mapping strategy is ideal for large multi-feature sites. The only drawback to this type of reticule is its size and weight. Though collapsible, it is still extremely difficult to carry through the dense undergrowth surrounding most petroform sites. Also, it is often necessary to re-string the instrument at each site. This proved to be both tedious and time-consuming.

At the beginning of the 1982 field season, a small 1-metre-square reticule, divided into 10 cm squares with string, was constructed (Fig. 5). It had 1-metre sections of dowelling for legs, which could

Fig. 4 Reticule Used in 1973 and 1974 for mapping.

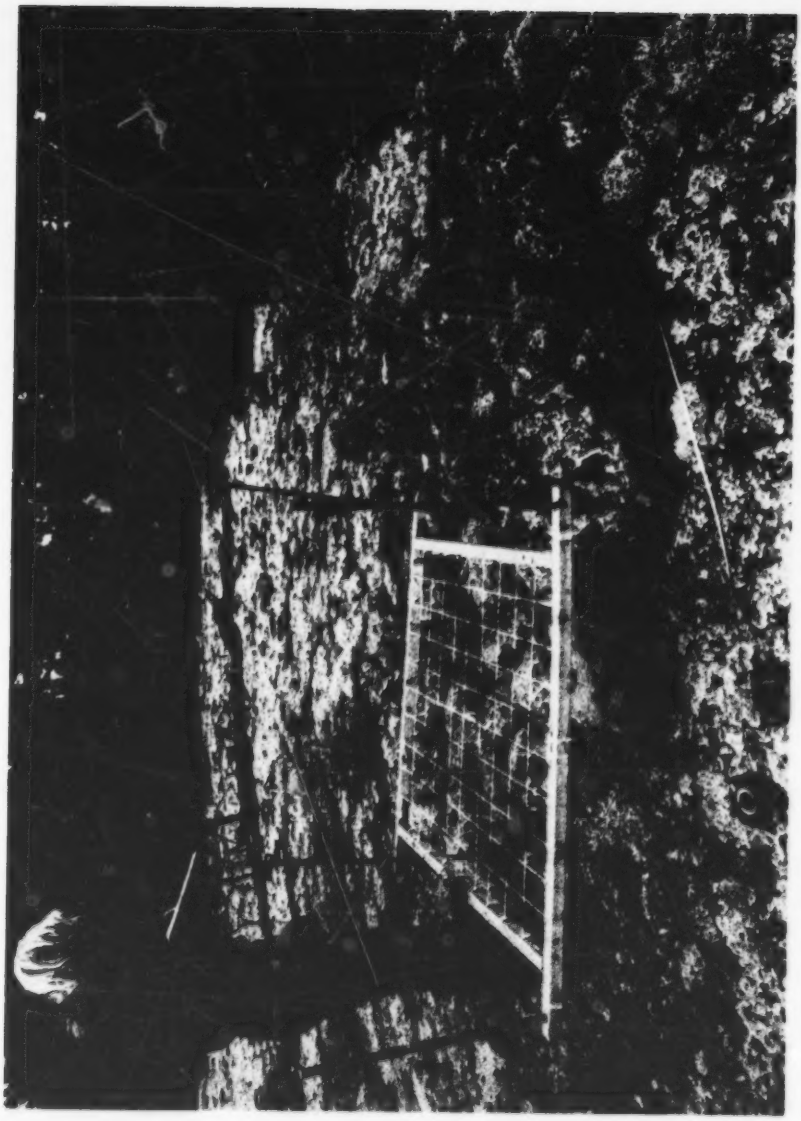


Fig. 5 Reticule used in 1982 survey.

be adjusted to reduce parallax and to adapt it to uneven ground. The result was an instrument suitable for mapping the more common small sites. It can be collapsed down to the size of a transit tripod and has about the same weight. Re-assembly time is under five minutes. Using a transit, the polar co-ordinates of the centre of the recticule are recorded, with the frame itself oriented to the north by means of a compass.

The method combines the accuracy of the larger reticule method with the speed of the "tipi-quick" commonly used on the Plains for mapping tipi-rings. It should be pointed out here that because of the small size of the features with which the project was concerned and their comparative complexity, the tipi-quick is an unsuitable recording instrument.

The most serious drawback to the small reticule technique is the necessity to orient the frame itself to north with a compass. Because the compass is held close to the ground (often closer than 30 cm), it is subject to very localized magnetic anomalies in the rock outcrops. This effect was noted at the first site mapped in the 1982 field season, TCA-6. Here, an anomaly ran through the centre of the site. When the compass was placed directly over it at the south end, the needle veered approximately 45° to the west and, at the north end, approximately 45° to the east. Visible evidence of the anomaly was found at the south end of the site in the form of an extrusion of finer-grained rock about 40 cm in length and 3 cm in width. Its continuation below the surface could be followed with the compass.

Fortunately, once aware of this possible source of error,

it is easy to detect and correct. Such anomalies seldom affected the compass when farther away than 50 cm. Checking the orientation on both sides of the reticule usually allows the proper correction to be made. At worst, it is necessary to move the reticule slightly to one side.

In the lab, the sites were reconstructed by assembling the drawings of 1-metre frames on large sheets of graph paper. The polar co-ordinates for the centre of each 1-metre-square were converted to grid co-ordinates. This makes reconstruction easier and more accurate. A high degree of accuracy is essential, particularly in the case of disturbed features, in order to evaluate the original form. The squares were then correctly positioned relative to one another, and the entire feature reconstructed.

All of the petroform maps presented here indicate magnetic north. True north is at 8°5.5' magnetic in 1982 for the general Whiteshell area.

ENVIRONMENT, SETTING AND SITES

ENVIRONMENT AND GENERAL SETTING

The general forest environment of our research area is classed as Mixed Deciduous-Coniferous Forest by T.R. Weir (1960). There are some large patches of Northern Boreal Forest, particularly along the middle sections of the Whitemouth River, and around Crowduck Lake. Another classification (Rowe 1972) places the research area in the interface of the Lower English River section of the Boreal Forest Region, and the Quetico and Rainy River sections of the Great Lakes-St. Lawrence Forest Region.

Individual species, of course, do not strictly respect these boundaries, and flora from all three areas grow where they find suitable conditions. Some species from the adjacent prairie also contribute to the vegetation cover. This blending has given the region a subtle uniqueness, although recent logging and fires have tended to detract from this. Throughout the southern forests of Canada, certain tree species have been depleted to the advantage of others (Rowe 1972).

Red and eastern white pine (Pinus resinosa and P. strobus, respectively) were at one time more predominant in the southern part of the area than the jack pine (P. banksiana) which has now replaced them due to logging and forest fires. Swampy areas favour black spruce (Picea mariana), tamarack (Larix laricina), willow (Salix sp.) and alder (Alnus rugosa). Away from rivers, balsam poplar (Populus balsamifera), white spruce (Picea glauca) and balsam fir (Abies balsamea)

make up much of the forest cover. Within this forest there are frequent stands of trembling aspen (Populus tremuloides) and smaller stands of white birch (Betula papyrifera). Along some riverbanks and lakeshores, green ash (Fraxinus pennsylvanica), white elm (Ulmus americana) and burr oak (Quercus macrocarpa) are found (Rowe 1972).

The general topography of the area is one of low to undulating relief. Large areas of glacially scoured Precambrian rock outcrops are interspersed with wide areas of swamp. While rock outcrops are usually low, they may occasionally rise as much as 70 metres above the surrounding swamps and lakes. Soil is thin over deep deposits of lacustrine clays and modified glacial tills. Sand ridges are also found in the southern section of the area. Drainage is by tortuous creeks and minor rivers into the Winnipeg River, and hence the topography is said to be "deranged".

Individual components of the environment both hindered and aided the 1982 survey. The three major obstacles were alder (Alnus rugosa), dogwood (Cornus sp.) and willow (Salix sp.). All prefer moist swampy soils, although not exclusively (Hosie 1973). A wetter climate with higher water levels would decrease the distance to be travelled from water courses to rock outcrops through these obstacles. Due to the decreasing depth of soils as one approaches the rock outcrop, these thickets could not be simply displaced. On the other hand, drier conditions would also be likely to diminish the fringe habitat preferred by these species. In short, these obstacles were probably never any worse than they are at present.

Though many sites are far from the water, the term "remote"

(Steinbring 1980) may be slightly misleading. Even under present conditions, moderate traffic through the thickets would leave trails which would facilitate passage. Early in the 1982 season, the survey team found bear paths through the thickets to be very useful even when rock outcrops were not visible. The trails usually lead up from the water to rock outcrops or through low areas between outcrops (from berry patch to berry patch). Also, when rock outcrops were not visible, their locations could often be determined by looking for certain tree species, jack pine in particular. This tree is highly variable in form and is an excellent indicator of the ground conditions in its immediate vicinity, even when only a glimpse of it is to be had. Usually by the second visit to a site, the time taken to penetrate the thickets was reduced very considerably. Once on the outcrops, even the most "remote" sites are only a pleasant hour's hike from a watercourse (although not always from the nearest point of water in a straight line).

Many petroform sites may seem remote and inhospitable because of their distance from potable water. During the hottest part of the 1982 season, the team often found itself short of water. This prompted the use of reservoirs under the moss amongst stands of black spruce. The water was found to be not only potable but of higher quality than water in the lakes and rivers, being very cold and free of algae.

Further, during the summer there is a fair amount of vegetable food on or around the outcrops. Blueberries, saskatoons, wintergreen, and boleate mushrooms are all available. We must assume that the builders of the petroforms were familiar with many more

methods than we are of finding their way about in what at first seems to be impenetrable and trackless bush. They must also have been familiar with the rock outcrops through resource utilization.

SITES RECORDED IN 1982 (FIG. 6)

The Tie Creek Area (TCA) Sites

This title was used by Dr. Steinbring (1980) for some of the sites in proximity to the Tie Creek Petroform Site (EaKv-14). None of the sites are on the same outcrop as EaKv-14 and so are best considered as discrete from it. Cairns, common around most other petroform sites, are absent here. The sites are all quite far from water and none are on what may be seen as portages between lakes or across loops of rivers. From elevated locations near each site, all of the ridges having sites in the area are visible.

Since in most cases Tie Creek is the nearest source of running water, there has been speculation (Steinbring 1970) that access to the sites was from this creek, possibly during a period of higher water levels. During the 1982 field season, after entering the area from several other directions, including the traditional George Lake road, the survey team discovered a relatively easy hiking route from the Whiteshell River. While this route is not apparent from the local roads, it is impossible to miss from the water. Every outcrop having a petroform site in the Tie Creek area is visible, and the Bannock Point Site, a few kilometres away, is easily reached. This route also links the Tie Creek area to the major southerly concentrations

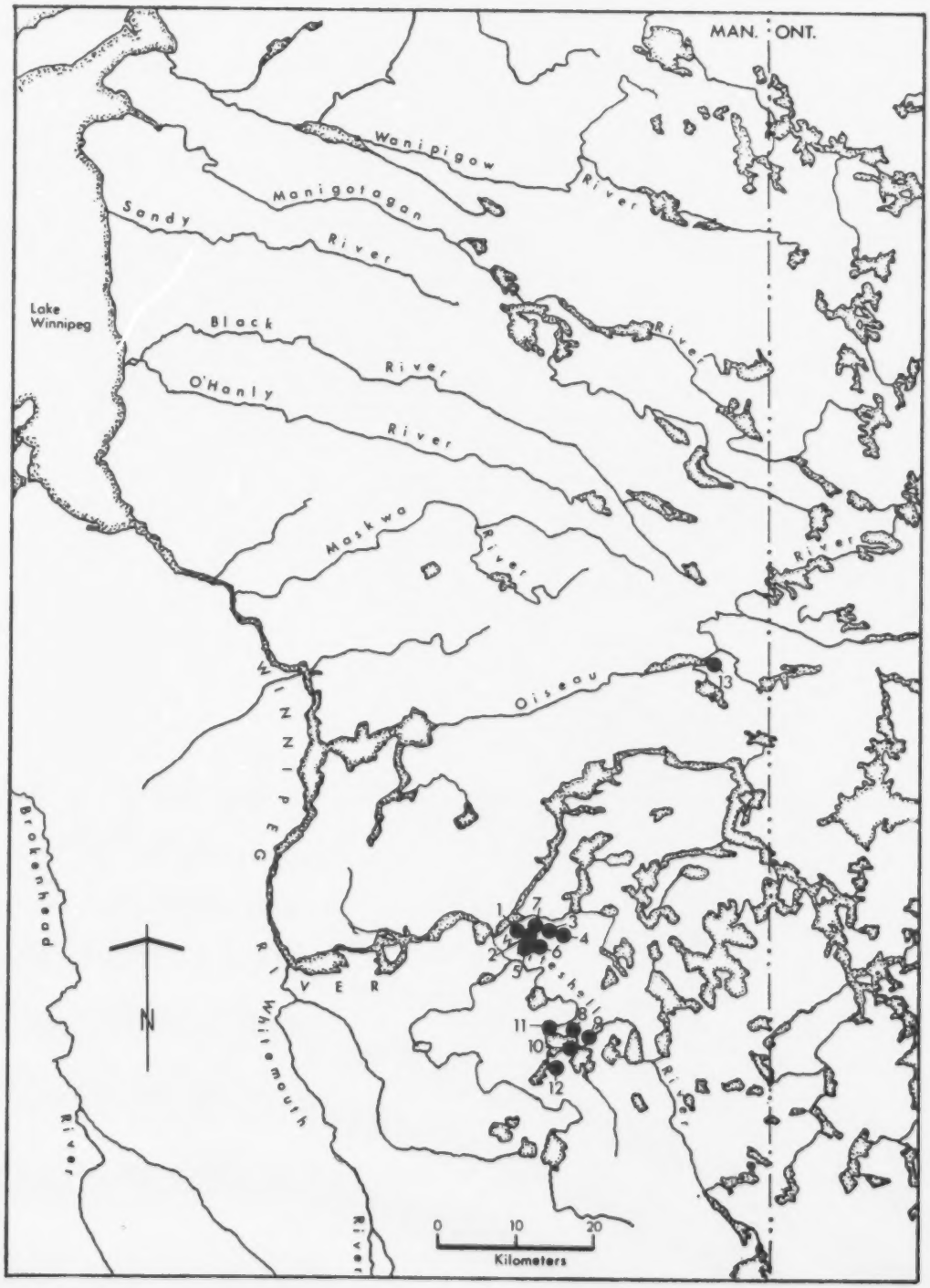


Fig. 6 Sites recorded during the 1982 survey; 1 through 7 -- Tie Creek Area 1 through 7, respectively; 8 -- Basket Falls/Rainbow Falls; 9 -- Jessica Lake Petroform Site; 10 -- Reed Falls; 11 -- White Lake; 12 -- Red Rock Lake; 13 -- Tulabi Falls Petroform Site.

of known petroforms via the Whiteshell River. In general, the TCA sites are far less inaccessible than previously imagined, even by those familiar with the area.

In light of the existence of this route, the higher water level hypothesis becomes unnecessary, although it remains a possibility. It is significant that no petroform sites were located on the north side of the lower section of Tie Creek or on the north side of Namao Lake -- locations where one might expect petroform builders navigating Tie Creek to have stopped. The argument for the Whiteshell River route being the primary access to the Tie Creek area sites could be strengthened by a more detailed description; however, such a description would not be in the best interests of site preservation.

TCA-1, EaKv-33 (Figs. 7, 8, and 9)

The site was reported by Dr. Douglas Elias and Mr. William Alton. It was again reported in 1969 by Mr. Harold Wells. There is no doubt that TCA-1 is the same figure as that reported in 1968 and 1969. It is in the same location and an intensive survey of the area revealed no other candidates. The figure was described in 1968 (Steinbring 1980) as a turtle with the carapace filled-in. No other feature in southeastern Manitoba is filled-in in this way. To describe this feature as a turtle effigy is probably inaccurate, as it has no appendages, nor is there any evidence that any existed in the past. In fact, although the map (Fig. 7) is very convincing, seen <u>in situ</u> the feature raises some doubts as to whether it is actually cultural in origin. The immediate rock outcrop and surrounding bush is covered

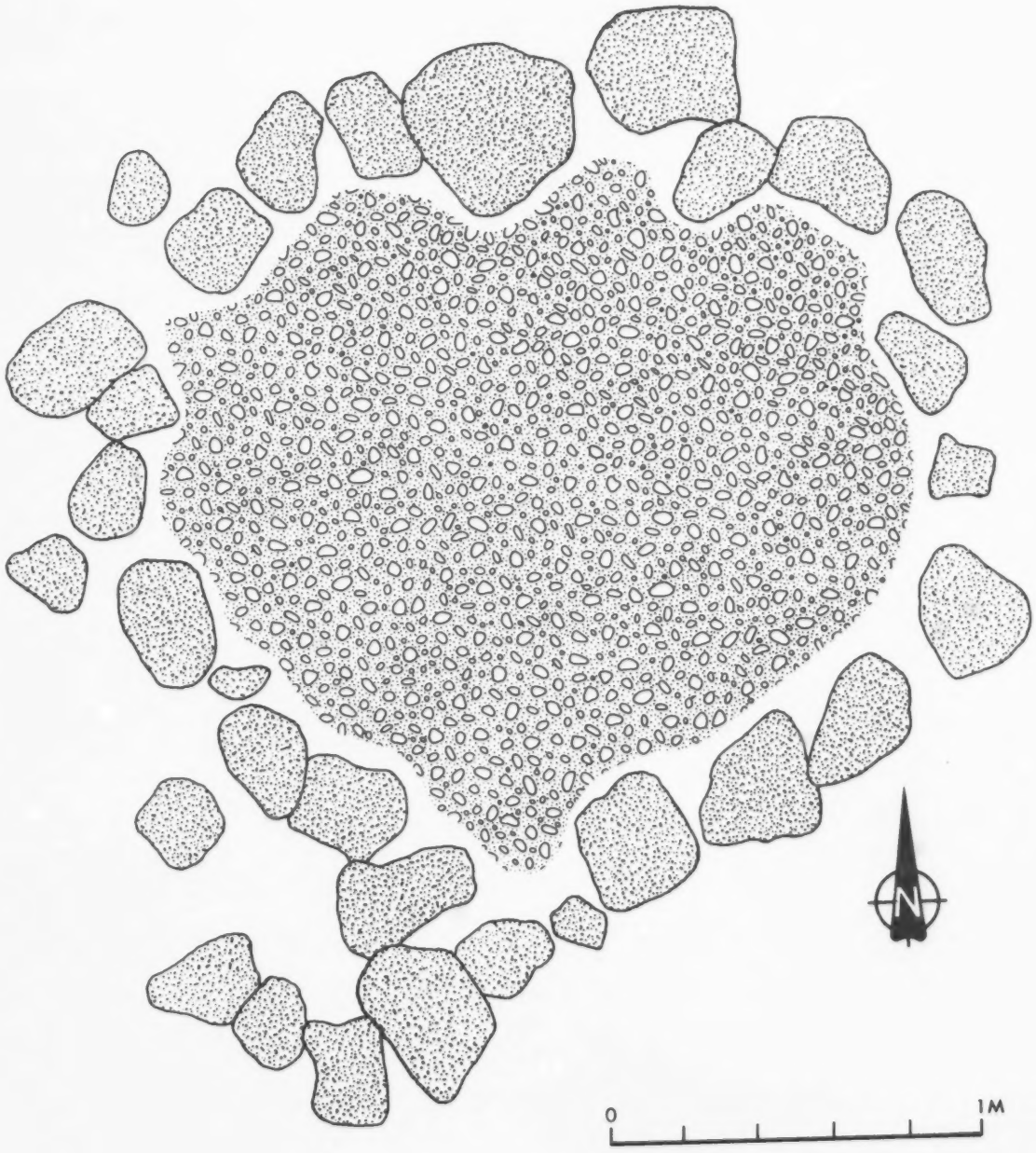


Fig. 7 Map of Tie Creek Area Site #1.

Fig. 8 Tie Creek Area Site #1, facing West.

Fig. 9 Linear arrangement made by bear just West of TCA-1, facing North.

by a glacial dump of small boulders.

To the west of the feature, about a hundred metres distant, is a line of eleven angular boulders oriented north-to-south (Fig. 9). Close inspection showed that the boulders all fitted together, and that they came from a crevice having the same orientation and situated about 20 centimetres further west. As the crevice was occupied by a large ant nest, it was concluded that the line was constructed recently by a bear rather than by humans.

TCA-2, EaKv-34 (Figs. 10, 11 and 12)

No past report of this site has been made. As with all Tie Creek area sites, TCA-2 does not connect two points of water. As with other ellipses, it is located to the side of the main outcrop. A casual by-passer would be likely to walk past the single feature in its alcove-like clearing. The feature bears in common with other elliptical petroforms a southwest to northeast orientation for its major axis, and has an interior stone. Because of disturbance it cannot be ascertained whether the ellipse originally had a "gate". The disturbance is not recent.

A suspicious arrangement of stones about 50 metres to the southeast was mapped during the 1982 field season (Fig. 12). The map did not reveal any significance in the arrangement. It is concluded that this is not a feature.

TCA-3, Mauer Site EaKv-19 (Fig. 13 and 14)

This site was named for the late John Mauer of the University

Fig. 10 Map of Tie Creek Area Site #2.

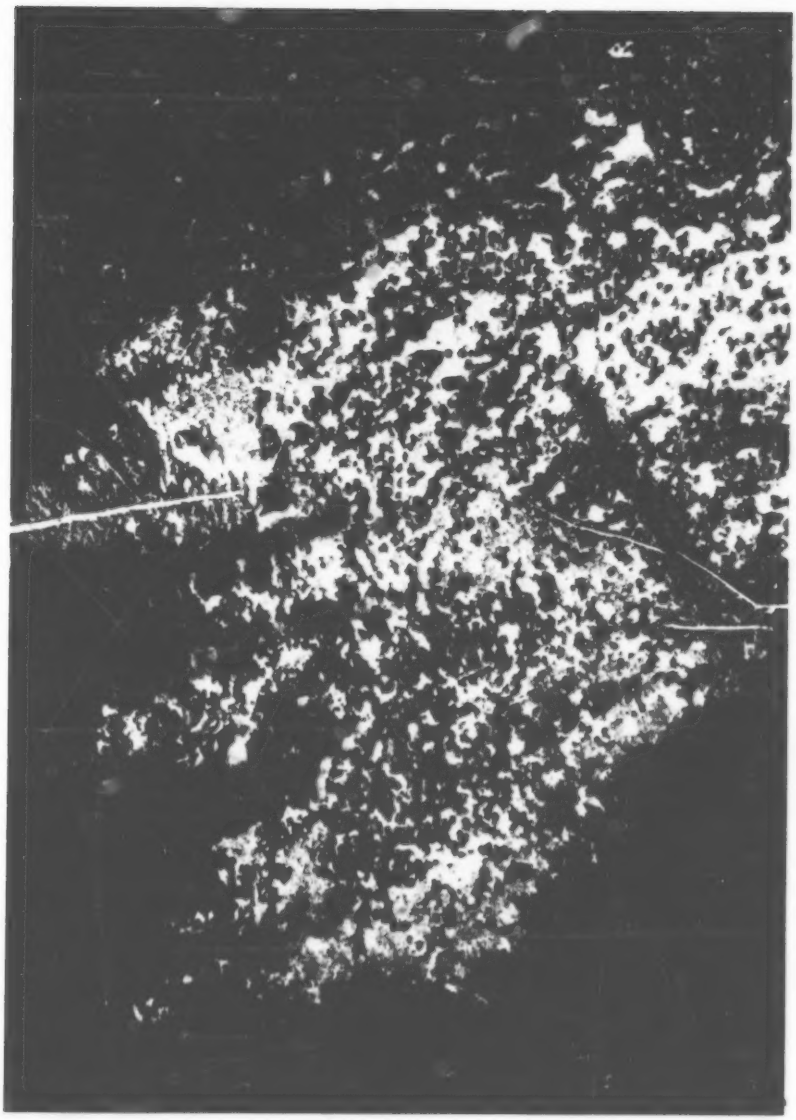


Fig. 11 Tie Creek Area Site #2.

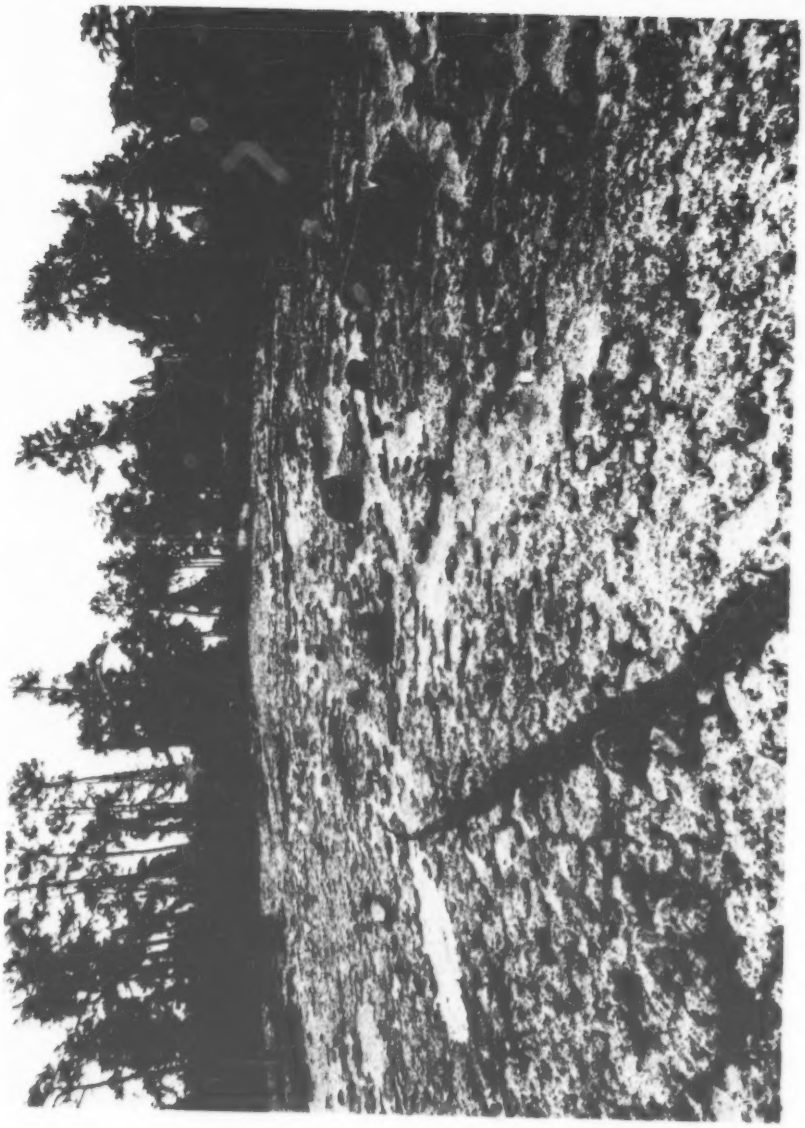


Fig. 12 Possible arrangement near TCA-2, facing East.

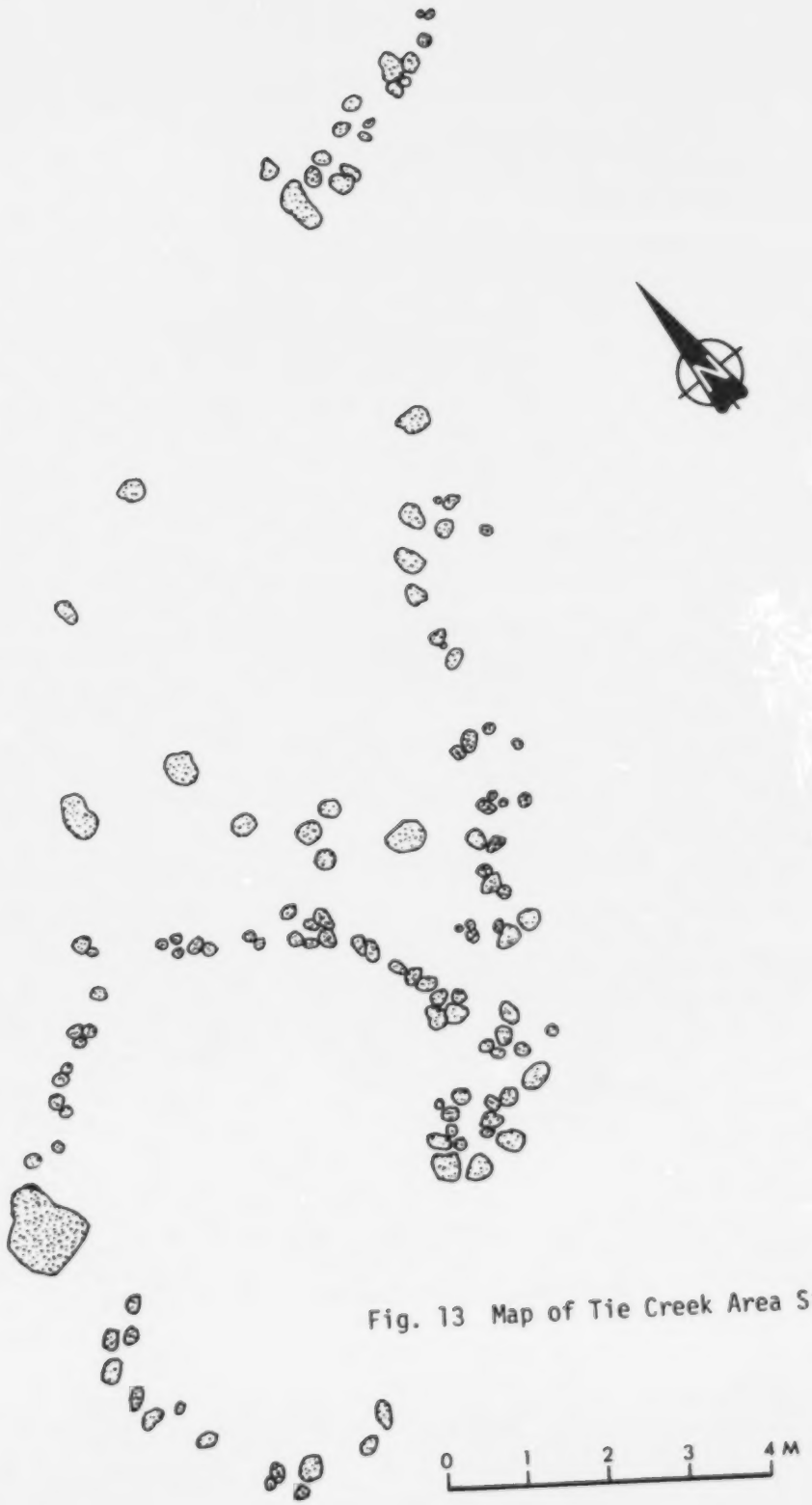


Fig. 13 Map of Tie Creek Area Site #3.

Fig. 14 Tie Creek Area Site #3, facing Northeast.

of Winnipeg, Department of Anthropology, who reported it in 1970. The site was rediscovered in 1978 by R.T. Callaghan and D. Bedard, and reported to Dr. J. Steinbring. In 1980, the authors photographed the site and filed a report with the Manitoba Historic Resources Branch.

The slope of the ground to the south alters the appearance in situ of the feature from that shown in the map (Fig. 13). In situ, the shape is that of two ellipses placed end-to-end and oriented south-west to northeast along the major axis. The south side is overgrown and the "Y" formed by the joining of the ellipses is oriented to the north. The eastern ellipse is badly damaged, possibly by off-road vehicles. There is excavation potential here in the overgrown section.

TCA-4, EaKv-28 (Fig. 15 and 16)

The location roughly marks the northern limit of the 1982 survey team's investigations on this extensive series of rock outcrops. There is no previous report of this anomalous site which has not been mapped because of its 3-dimensional structure. The single feature is that of a small oval, about 2 metres long, connected by a line to a circular collection of stones in a hollow. The oval is partially piled and the circular part is filled with soil. This latter part may be natural, but it presents excavation potential.

TCA-5, EaKv-35 (Fig. 17)

Were it not for the access road to the hydro line, the rock outcrop upon which this site is located could be easily reached from the Whiteshell River. The site consists of a single linear feature,

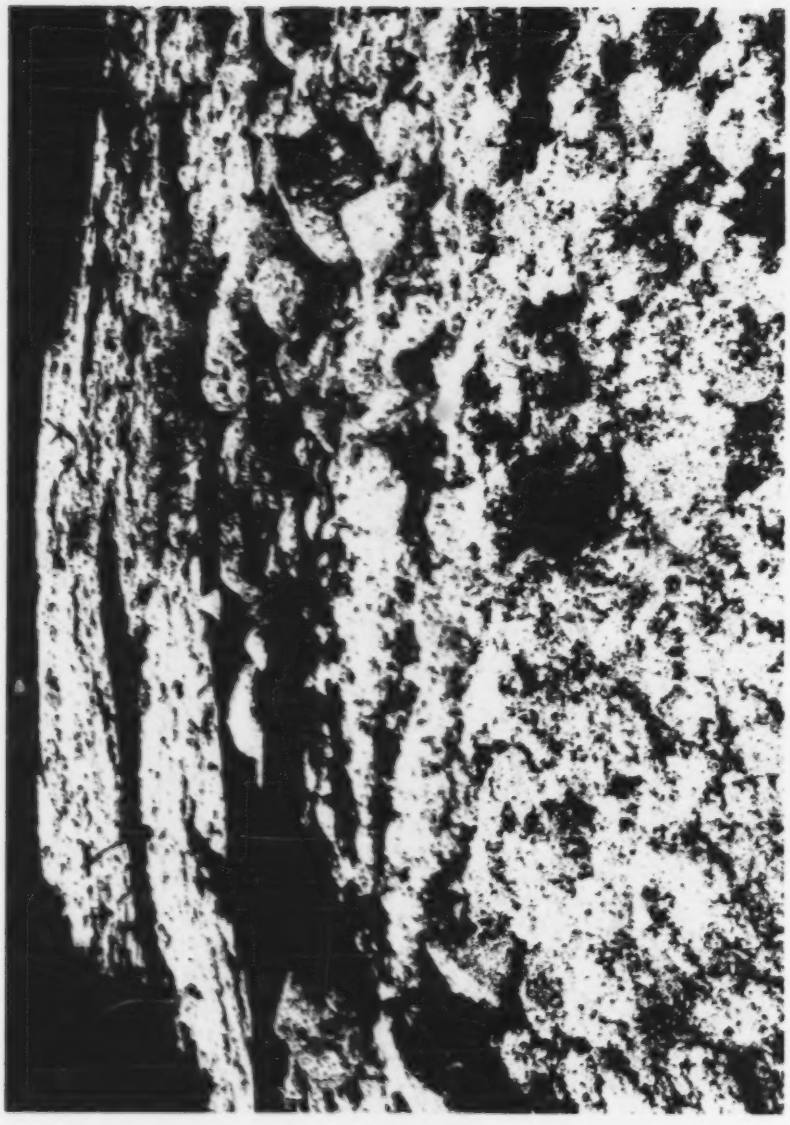


Fig. 15 Tie Creek Area Site #4, facing West.

Fig. 16 Tie Creek Area Site #4, facing South.

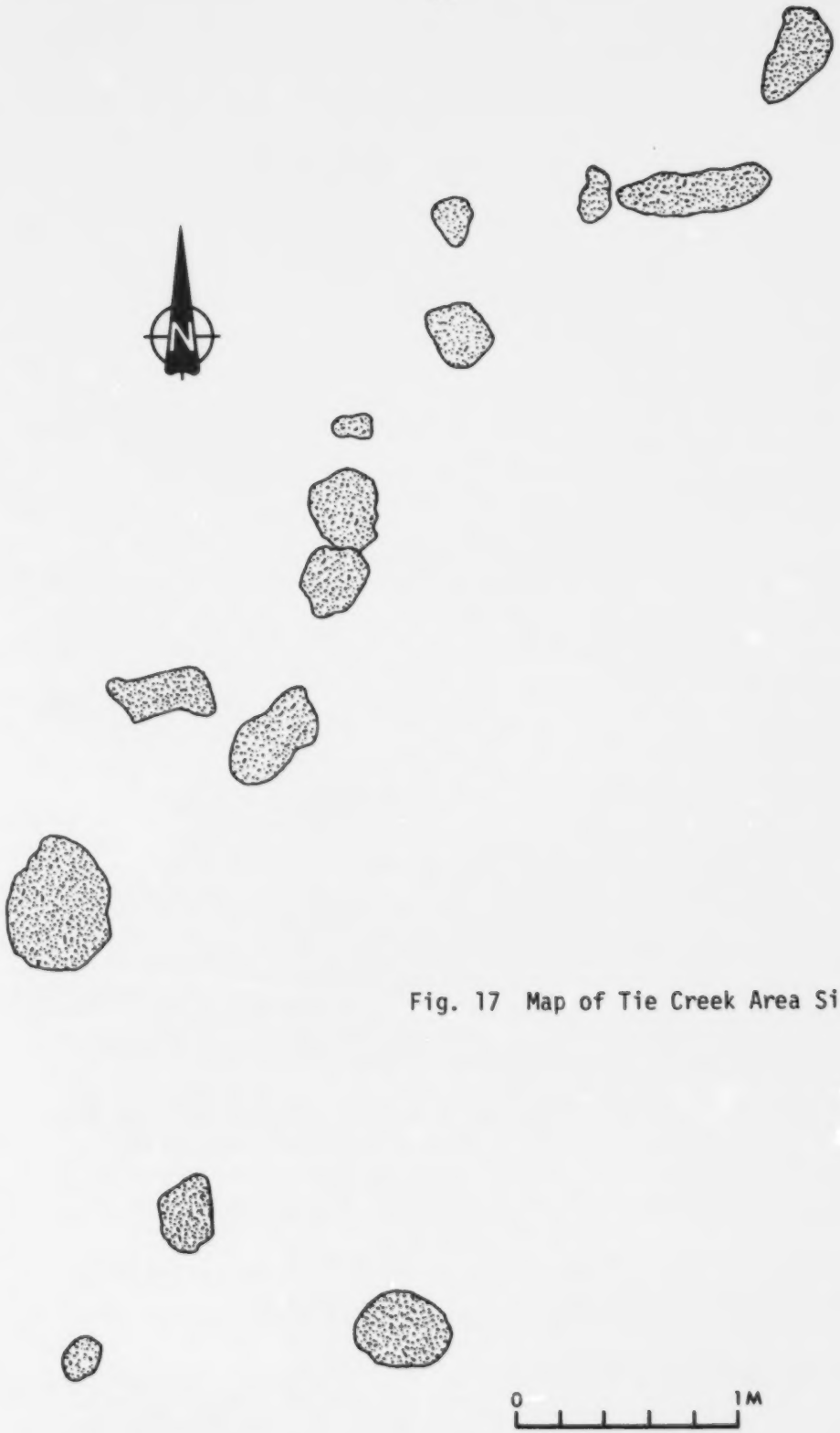


Fig. 17 Map of Tie Creek Area Site #5.

oriented north-to-south, with a curve at the south end. It is similar in form to the Scarfe Site Linear (EaKu-7), and does not appear to have been a snake effegy. It could point the way to TCA-6 (EaKv-36). No previous reports have been made of this site, which has suffered some disturbance.

TCA-6, EaKv-36 (Fig. 18, 19 and 20)

Three features make up this previously unreported site, a gated circle and a sinuous line running into an oval. It is the only multi-feature site in the area besides Tie Creek itself (EaKv-14). The site has been badly disturbed in what seems to be a very methodical manner. This disturbance seems to have taken place a long time ago. The lichen is so dense here that the shape of the features appears to shift before one's very eyes.

TCA-7, EaKv-18 (Fig. 21)

In 1969, Mr. Harold Wells reported this curvilinear arrangement. The site was again reported by Mr. Bruce Matthews in 1976. Matthews described the feature as a sinuous line about 50 feet long (Steinbring 1980). It was later described by Matthews as being 30 feet long. The feature strongly resembles Sutton's (1965) curvilinear at the Bannock Point Site.

The 1982 survey team did not locate the feature. It is not likely, however, that it has been destroyed, as human traffic is not heavy in the area. The site can be considered confirmed in light of the photograph (Fig. 21) supplied by Dr. Steinbring.

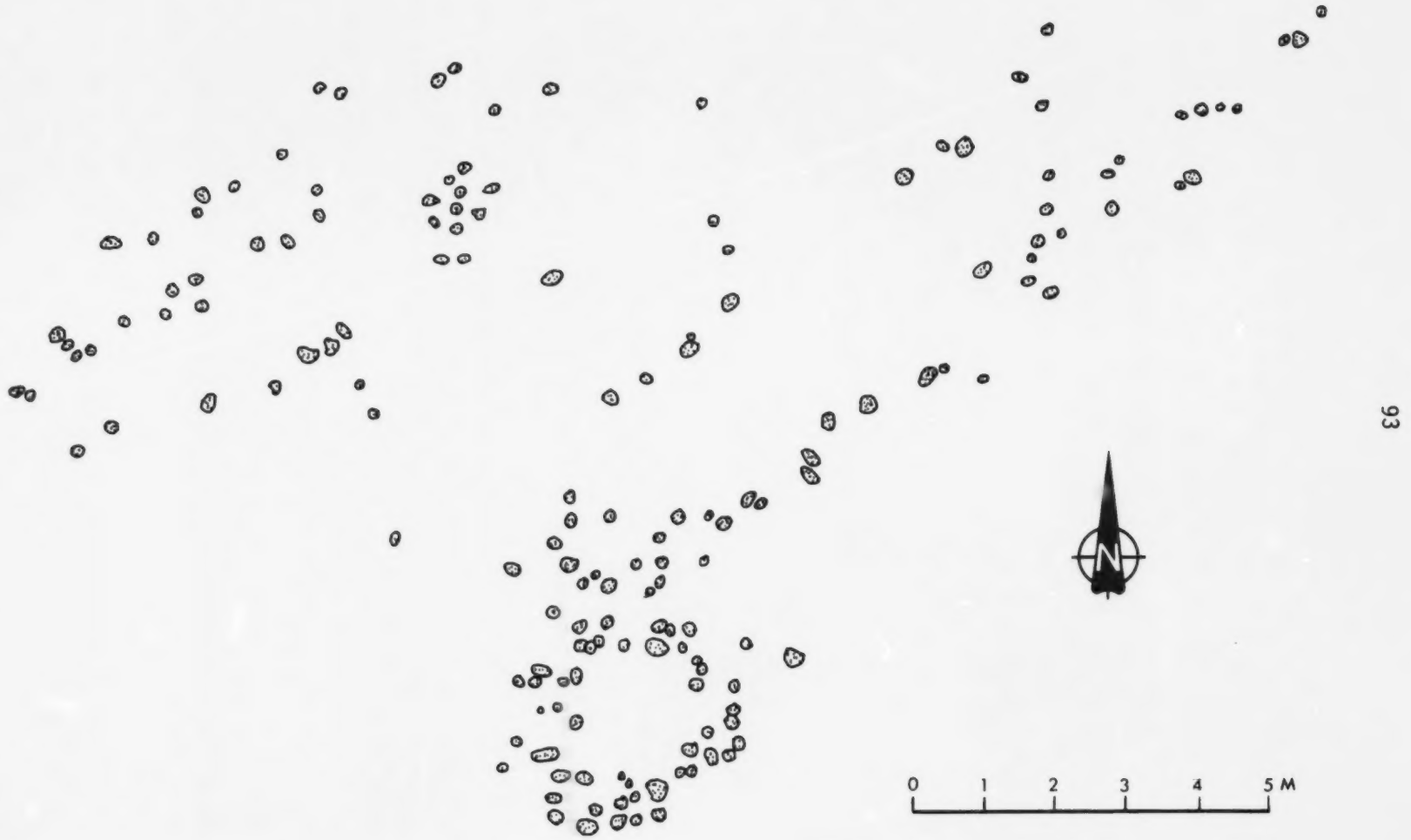


Fig. 18 Map of Tie Creek Area Site #6.

Fig. 19 Tie Creek Area Site #6, facing East.

Fig. 20 Tie Creek Area Site #6, facing North.

Fig. 21 Tie Creek Area Site #7 (photograph courtesy of Dr. J. Steinbring).

The Basket Falls/Rainbow Falls Site, EaKv-12 (Fig. 22-29)

This site has been defined for convenience as running from Basket Falls on the Whiteshell River to the south side of Rainbow Falls. It has caused a great deal of confusion in the literature. Feature #1 was reported in 1949 by Leechman. It was again reported by Hlady in 1950 along with Feature #3 and several other, now missing, features. One of these missing features, a line, is visible in Leechman's (1949) photograph. In 1965, Sutton published maps (made in 1959) of features #1 and #3. Maps drawn from Hlady's notes were later published by Steinbring (1980). Until now, it was uncertain whether these were all separate features, or simply multiple reports of the same feature. Feature #2 was either never reported or only vaguely referred to (Hlady 1950). A map of Feature #4 was published by Lenius in 1974. In the same year, this feature was mapped by A.P. Buchner.

There are two recently constructed turtle effigies at the site. The first is a small turtle situated between features #2 and #3. It is under 1 metre in diameter with "80", presumably the year of manufacture, written in stones above it. The second recent effort is near Feature #4 on the highest part of the outcrop south of Rainbow Falls. There is neither lichen growth nor debris around the boulders, testifying to its very recent manufacture. If this fake survives, it will be interesting to note how quickly it takes on the appearance of antiquity.

The features seem to direct one along a trail between Basket

Falls and Rainbow Falls. It has been noted that this cuts off for canoeists a large loop of the Whiteshell River (Sutton 1965; Steinbring 1980). This same trail is marked by a series of cairns made of stone slabs with angled uprights. These cairns are distinct from the more modern Boy Scout type of stone trail marker also found in the area.

Feature #1 (Figs. 22 and 23)

This is probably the most perfect turtle effigy so far recorded in the area. A few minor changes have been made to the feature, judging from Sutton's (1965) map. These changes only enhance the form and have not changed the direction in which the feature is pointing. If Sutton is correct, there were slightly fewer stones at the time of his visit (1959) than are shown in the 1982 map (Fig. 22). He also records the presence of a centre stone, absent in the 1982 map.

Feature #2 (Figs. 24 and 25)

It is difficult to be sure whether this badly disturbed feature is simply a circle or was once something more complex. Hlady (1950) indicated that a circle did exist in the area. One side of it has fairly recently been removed and reconstructed as a trail marker. The feature is located on the trail one would use to reach Rainbow Falls from Basket Falls.

Fig. 22 Map of Basket Falls/Rainbow Falls Site, Feature #1.

Fig. 23 Basket Falls/Rainbow Falls Site, Feature #1, facing Northwest.

Fig. 24 Map of Basket Falls/Rainbow Falls Site, Feature #2.

Fig. 25 Basket Falls/Rainbow Falls Site, Feature #2, facing West.

Feature #3 (Figs. 26 and 27)

This turtle effigy seems to have undergone rearrangement since Sutton (1965) mapped it in 1959. However, there is a much greater correspondence between Hlady's earlier map (Steinbring 1980) and our 1982 map, presented here (Fig. 26). It appears then, that Sutton was in error, and that this is the reason Buchner (n.d.) lists the feature as pointing west rather than east. Rather than pointing towards Rainbow Falls, which are audible from the site, it is oriented towards the Jessica Lake Petroform Site. The two sites may in fact be continuous.

Feature #4 (Figs. 28 and 29)

Because of its orientation and location, this feature may be more closely related to the Reed Falls Site on the east side of the highway than to the other figures at Rainbow Falls. Feature #4 is situated on a probable portage over the peninsula between Jessica Lake and White Lake, avoiding Reed Falls and Rainbow Falls. Slight changes have been made since Lenius' (1974) report was published. Most obvious is the addition of a break-like stone (Fig. 29) at the west end of the feature. This change was not evident in Buchner's slightly later map made in 1974 (Fig. 28).

The Jessica Lake Petroform Site, EaKu-8 (Fig. 30 to 39)

All but one of the five features at this site are badly disturbed. According to Mr. C. Clark, who has long had a cabin in the area, this disturbance is fairly recent. As was mentioned above, this site may form a continuous trail in conjunction with the first three

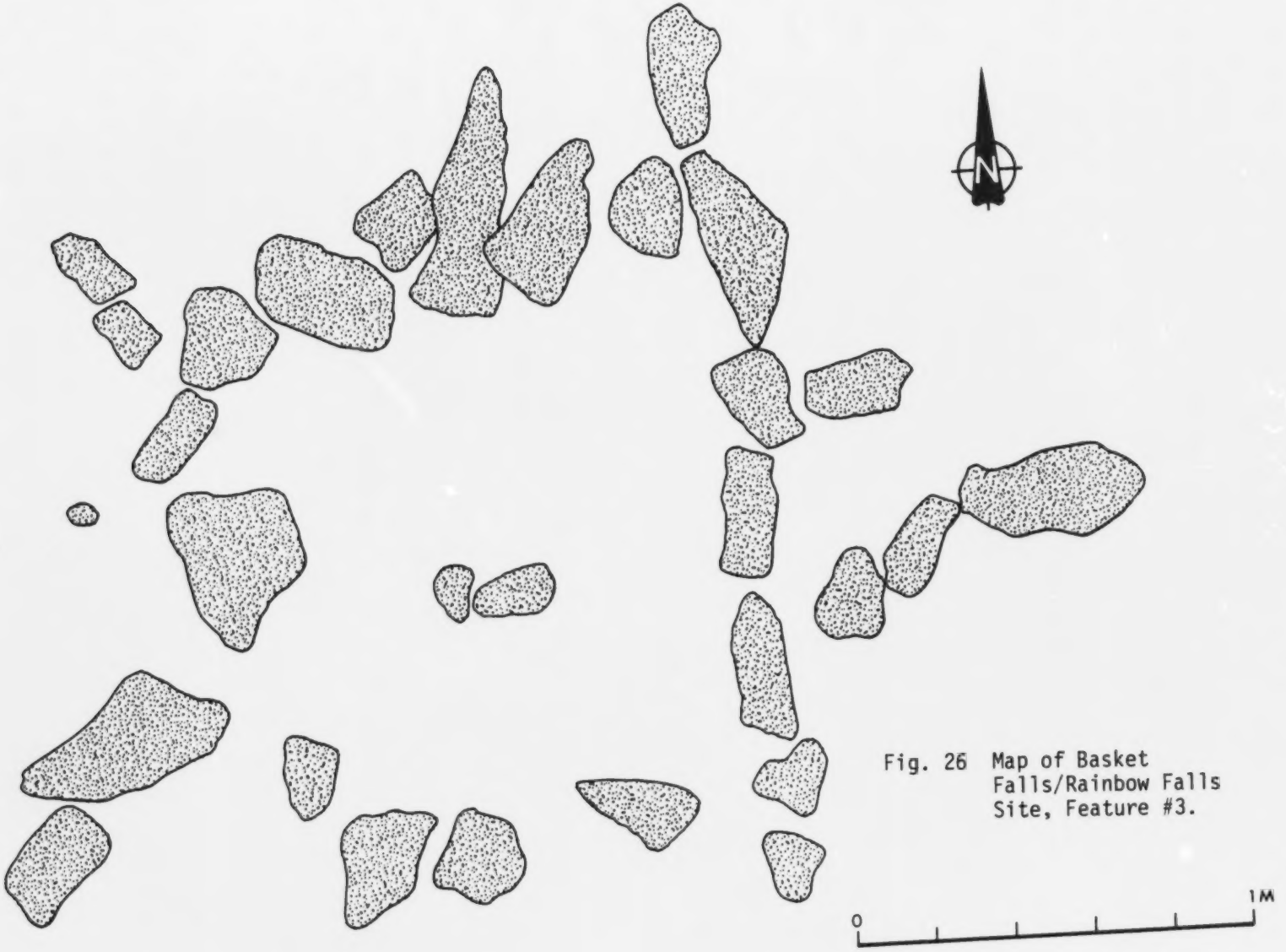


Fig. 26 Map of Basket Falls/Rainbow Falls Site, Feature #3.

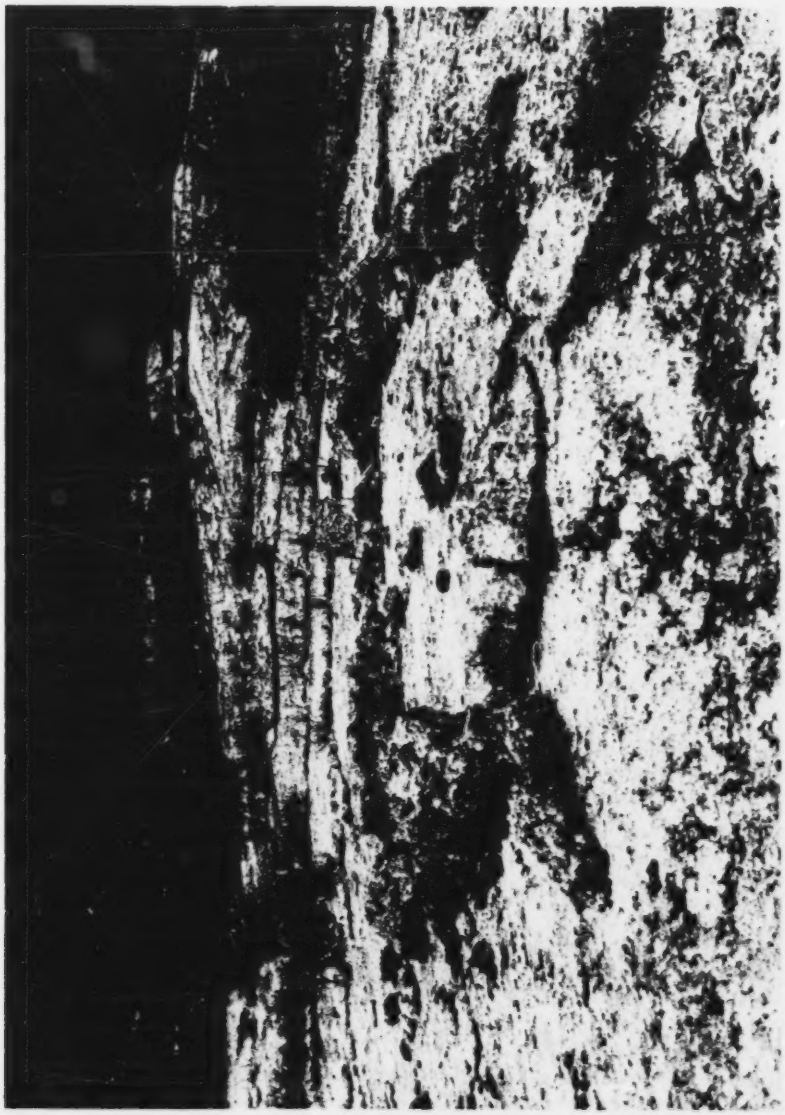


Fig. 27 Basket Falls/Rainbow Falls Site, Feature #3, facing North.

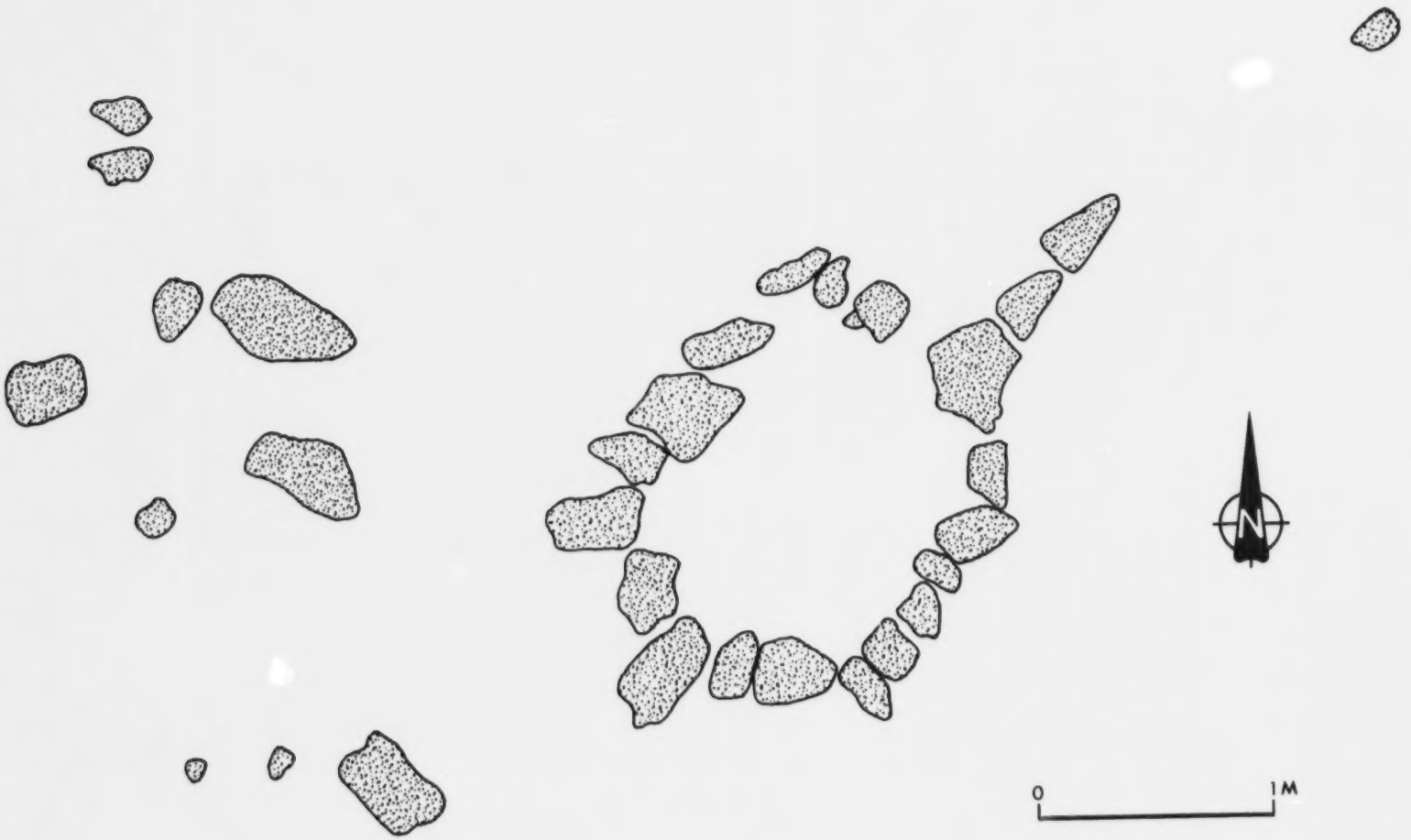


Fig. 28 Map of Basket Falls/Rainbow Falls Site, Feature #4 (courtesy of A.P. Buchner).

Fig. 29 Basket Falls/Rainbow Falls Site, Feature #4, facing Southwest (courtesy of A.P. Buchner).

Basket Falls/Rainbow Falls features. The proposed trail would run from Basket Falls to the point where the Whiteshell River enters Jessica Lake. There is also some probable connection between this site and the Jessica Exit Petroform Site (Buchner 1976a) to the south. Feature #2 of Jessica Lake actually lies about halfway between the two sites. As at the Basket Falls/Rainbow Falls Site, angled slab cairns occur at the Jessica Lake Petroform Site.

Feature #1 (Figs. 30 and 31)

The disturbance of this feature is great, although it appears to be circular in form. Many of the boulders have split horizontally, and only the bottom portion have been mapped. Further confusing this feature are exfoliated sections of the rock outcrop itself. While the feature is the highest of the five at the site, it is not quite at the highest point of the outcrop.

Feature #2 (Figs. 32 and 33)

A link between the two petroform sites on this point of land may be formed by Feature #2. Since the feature is completely undisturbed and circular, it cannot be viewed as directional in function. It is smaller than most petroforms, and is located on a small outcrop south of the main concentration.

Feature #3 (Figs. 34 and 35)

Like Feature #1, Feature #3 is so badly disturbed that its original nature cannot be determined. A line drawn from the centre

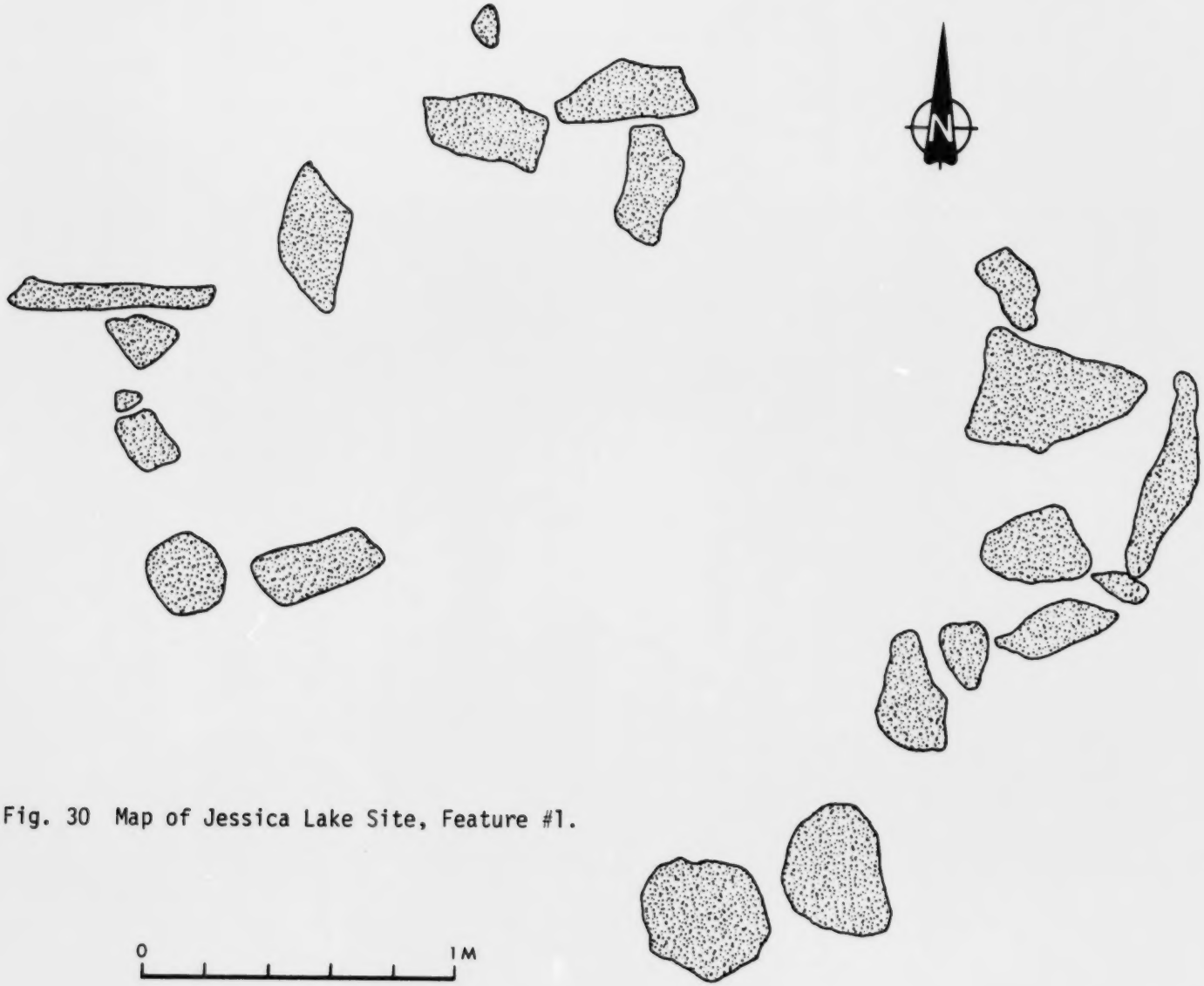


Fig. 30 Map of Jessica Lake Site, Feature #1.

Fig. 31 Jessica Lake Site, Feature #1, facing Northeast.

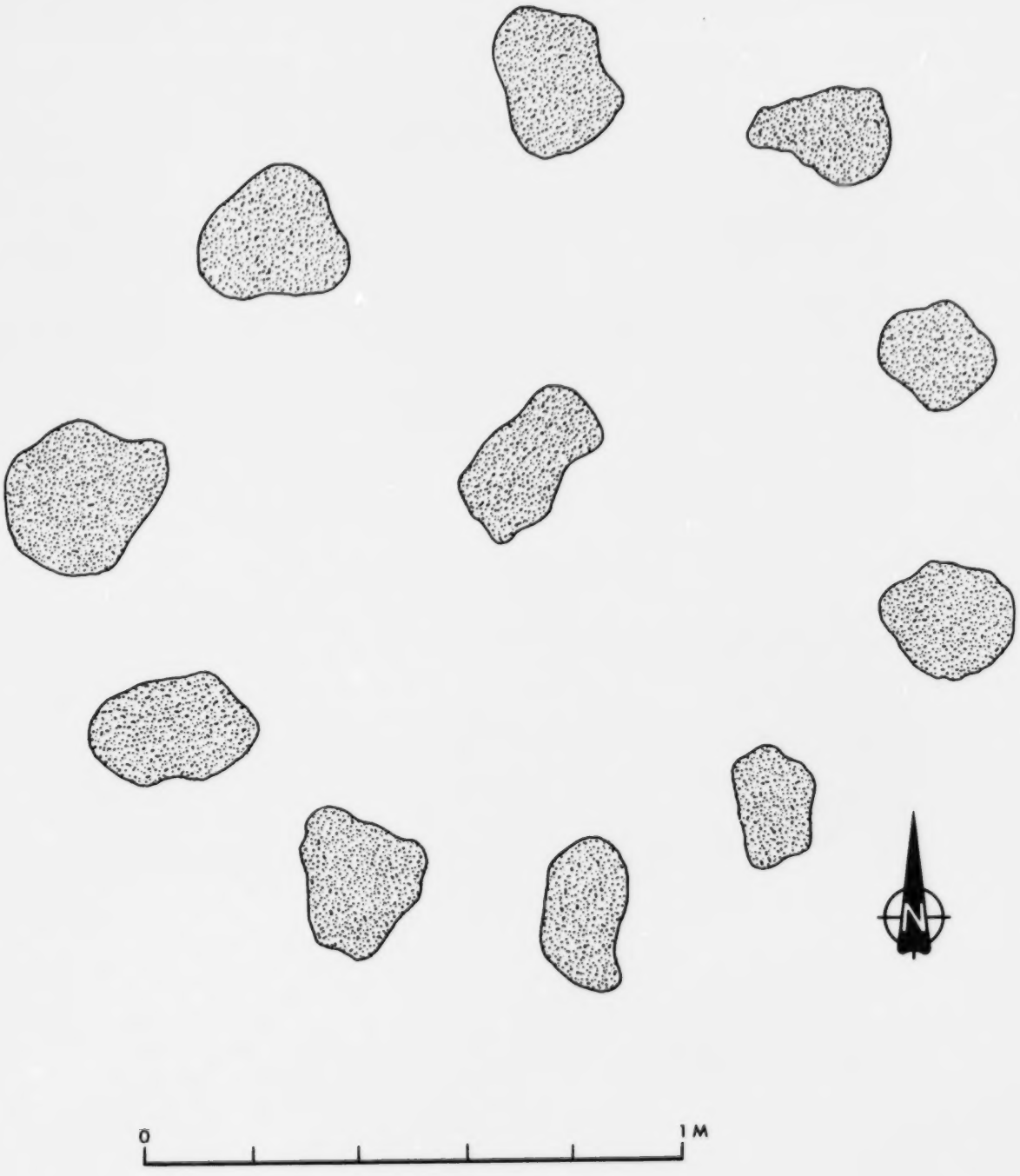


Fig. 32 Map of Jessica Lake Site, Feature #2.

Fig. 33 Jessica Lake Site, Feature #2, facing East (courtesy of S. Lundin).

Fig. 34 Map of Jessica Lake Site, Feature #3.

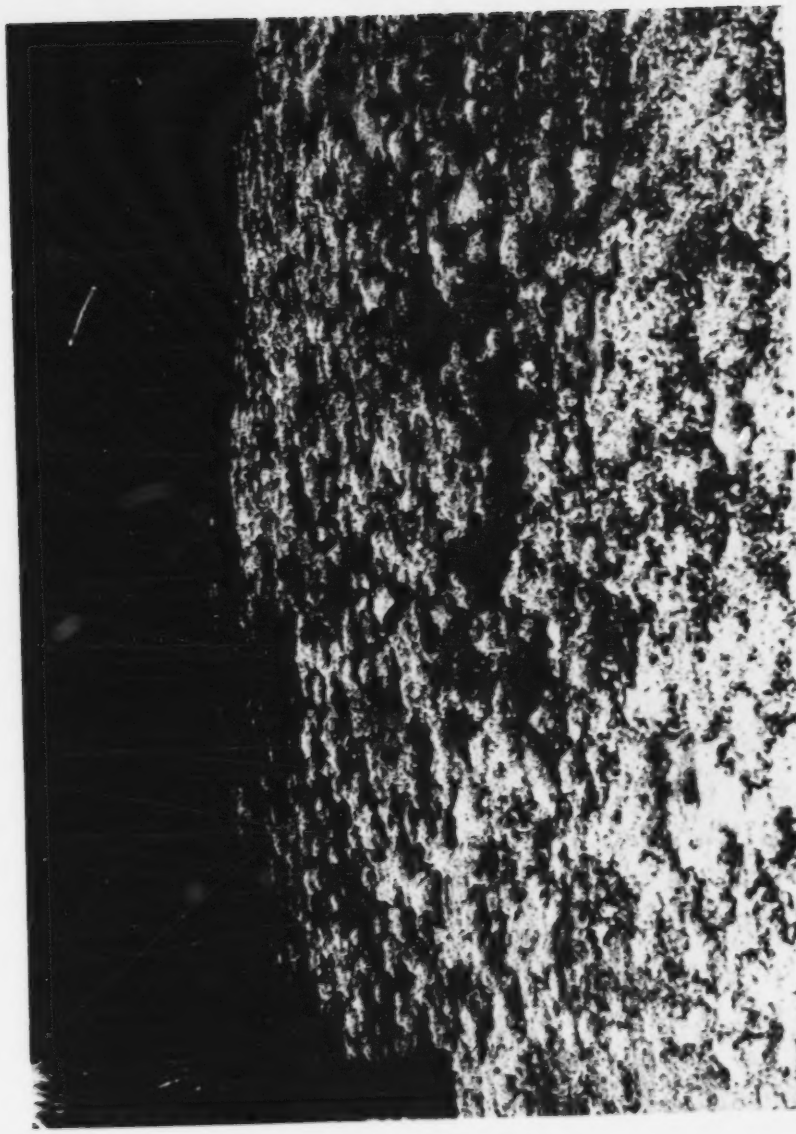


Fig. 35 Jessica Lake Site, Feature #3, facing North.

of the cluster through the boulder to the extreme northeast points in the direction of Feature #4. The path between these two features is the least obstructed and the most level in the area. The feature is located at a fairly low elevation on the same granite dome as are features #1 and #4.

Feature #4 (Figs. 36 and 37)

This is the second least disturbed feature at the site. As with Feature #3, this one has a recognizable orientation. A line drawn through the centre of it and the boulder appendage to the east points out the only reasonable way of reaching the Whiteshell River. Any other route requires the penetration of dense bush, the descent of vertical cliffs, or both.

Feature #5 (Figs. 38 and 39)

Feature #5, lying on a rock outcrop adjacent to the rest of the site, is almost totally unrecognizeable as a cultural artifact. In fact, it is largely the position of the rocks on the outcrop that makes it unlikely to be natural. A line drawn through its long axis points to the water just above Reed Falls.

The Reed Falls Site, EaKv-24 (Figs. 40, 41 and 42)

The site was brought to the attention of the 1982 survey team by Mr. C. Clarke. It is on his property and until about three years ago consisted of five features. At about that time, three features were totally destroyed. The three features were a "tipi-ring", a

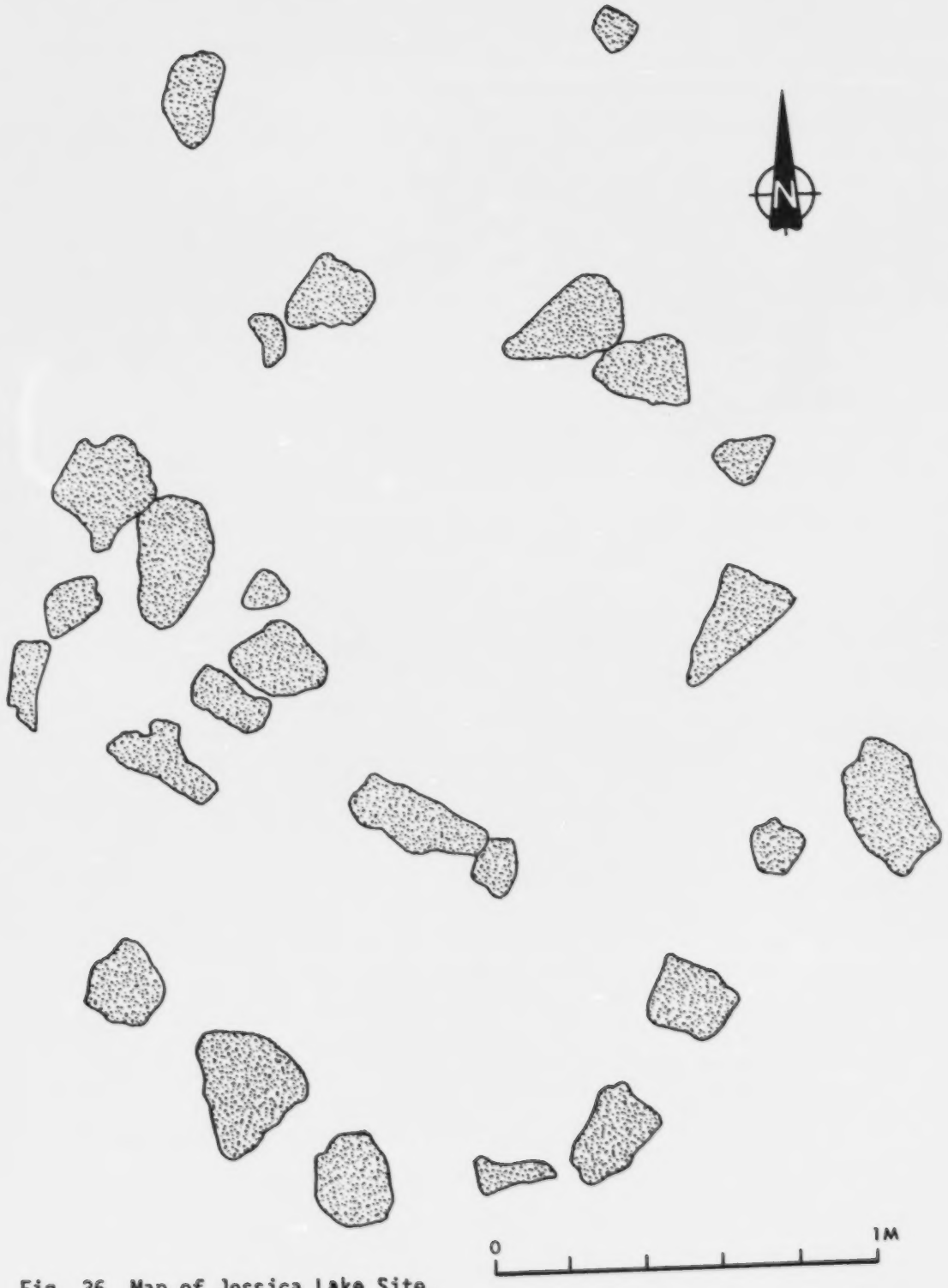


Fig. 36 Map of Jessica Lake Site, Feature #4.

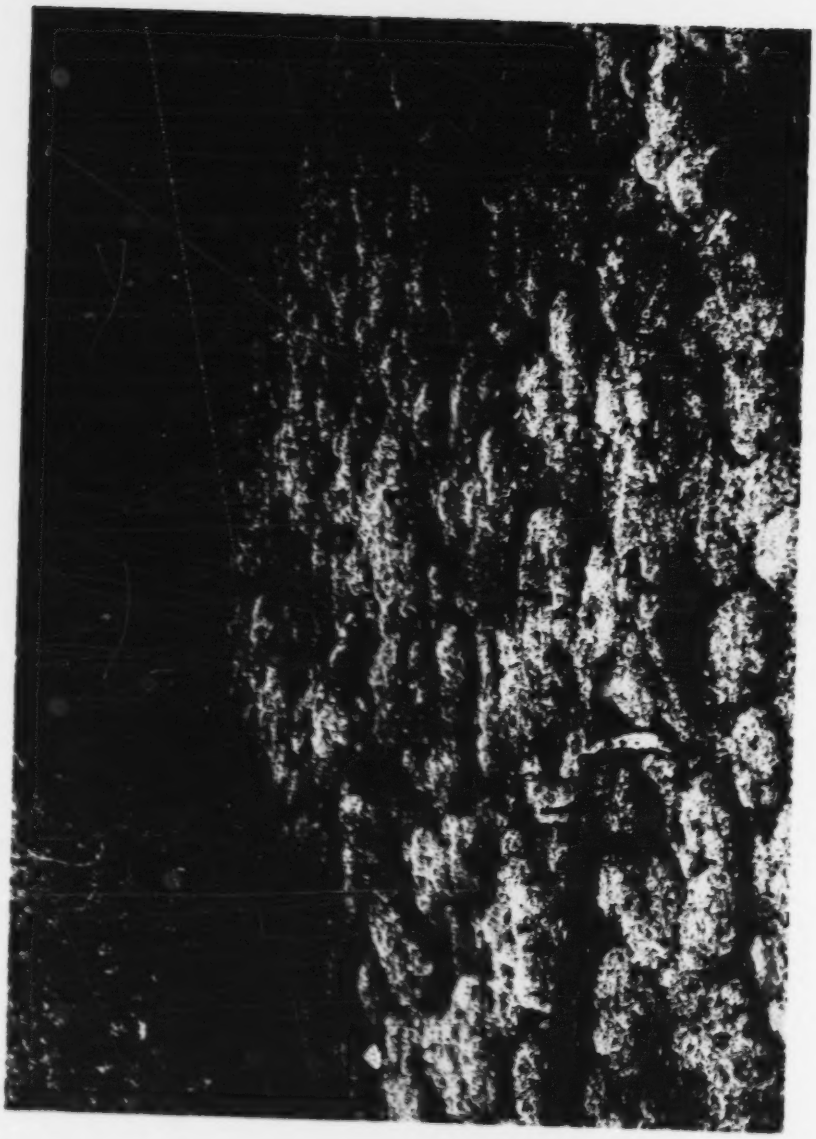


Fig. 37 Jessica Lake Site, Feature #4, facing North.

Fig. 38 Map of Jessica Lake Site, Feature #5.

Fig. 39 Jessica Lake Site, Feature #5, facing West.

hearth, and a linear form. The shapes of the destroyed features can still be partially discerned from the remaining stones and from the marks of the missing stones in the lichen. The two surviving features are a small cricle (Figs. 40 and 41) and an "altar" (Fig. 42). The "altar" may have been a cache or even a cooking platform. The distance between the two features is 21.27 metres at an angle of 121° 52' degrees. The circle lies on the lowest elevation of the site and the "altar" on the highest. The other features once lay between the two elevations.

The White Lake Site, EaKv-21 (Figs. 43 and 44)

Feature #1, an ellipse, was reported by Buchner (1976a). As is common for this type of feature, it is isolated in a small clearing. Feature #2, reported here, is a rough parabolic arc. It is in a separate clearing but on the same general outcrop as Feature #1. In relation to the latter, Feature #2 is to the southwest and appears to be pointing out the ellipse.

The outcrop upon which these features are located is low and surrounded by water or swamp on all sides. It is at the end of a long narrow swampy peninsula formed by the Whiteshell River and White Lake. It is not near the main route of travel and is not on a portage of any kind. Despite the forbidding surroundings and its isolation, the outcrop can be easily spotted from the water by looking for oaks and the twisted form of jackpine. Access, while nearly impossible with a large boat, is not difficult with a canoe. Excavations around the features may yield valuable data.

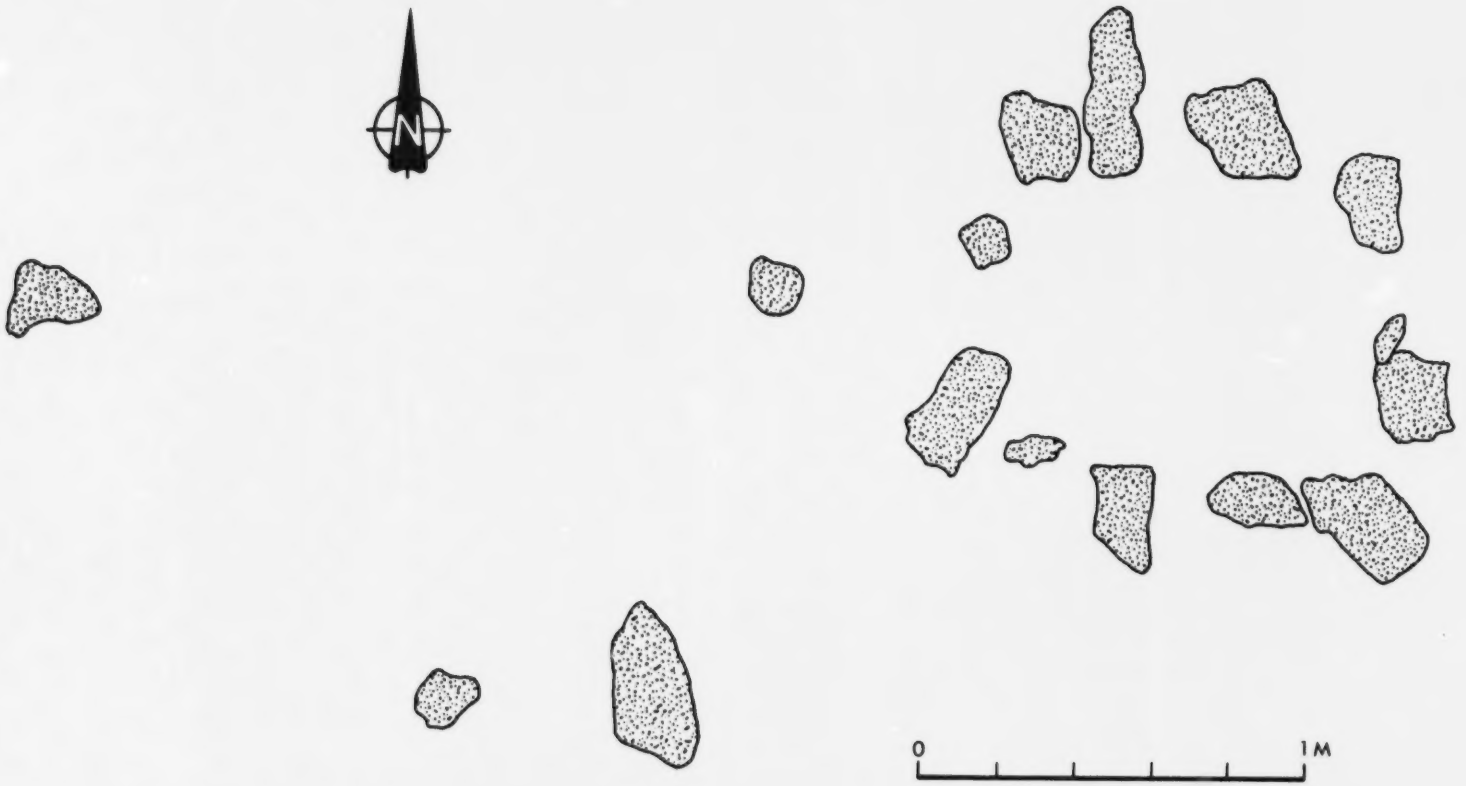


Fig. 40 Map of Circle at Reed Falls.

Fig. 41 Reed Falls Site Circle, facing Northeast.

Fig. 42 Reed Falls Site "Altar", facing West.

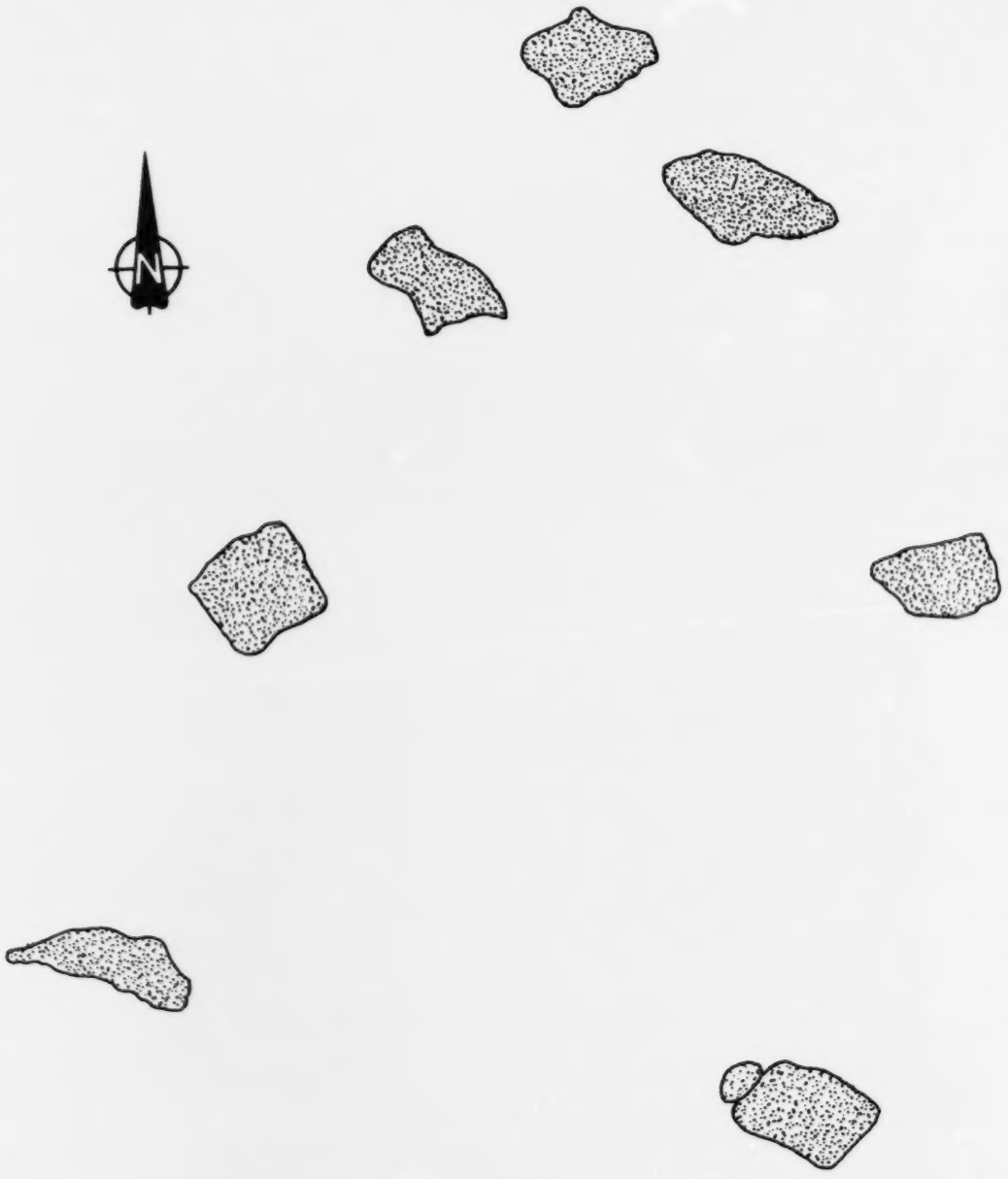


Fig. 43 Map of White Lake Site, Feature #2.

Fig. 44 White Lake Site, Feature #2, facing North.

The Red Rock Lake Site, DlKv-2 (Figs. 45, 46, 47 and 48)

The site was first officially recorded by a crew under Dr. A.P. Buchner in 1981 but was not mapped until 1982. The site is located on an outcrop between the south bay of Jessica Lake and Red Rock Lake. The turtle effigy is oriented so that the head is pointing towards Red Rock Lake. The circle is about 2.9 metres north and west of the turtle. It has a gate opening to the northwest. Southeast of the two features are two angled slab cairns, also pointing towards Red Rock Lake. There is a small crescent-like figure to the southwest on the same outcrop which is probably of recent manufacture; the places from which the stones of this figure originally came can still be seen. The site is in excellent condition.

The Tulabi Falls Petroform, EcKt-20 (Figs. 49 and 50)

W. Anderson of the Manitoba Parks Branch reported this site in the fall of 1982. The single feature is a long sinuous line which may be a snake effigy. While the "head" has a convincing triangular shape, the stones are not graded to become smaller towards the tail. In fact, the size of the stones is actually graded towards the head, as if the head was switched end for end. As it is, the line is oriented south-west to northeast, with the "head" down-slope to the lake. The individual boulder elements are often of poor quality, being broken exfoliated slabs. A cursory reconnaissance of the area disclosed no glacial dumps or other sources of boulders. The builders were apparently restricted in available materials. Lichen growth indicates that this feature is not "recent", but the term is highly subjective. The location

Fig. 45 Map of Red Rock Lake Site, Turtle.

Fig. 46 Red Rock Lake Site, Turtle, facing South.

Fig. 47 Map of Red Rock Lake Site, Circle.

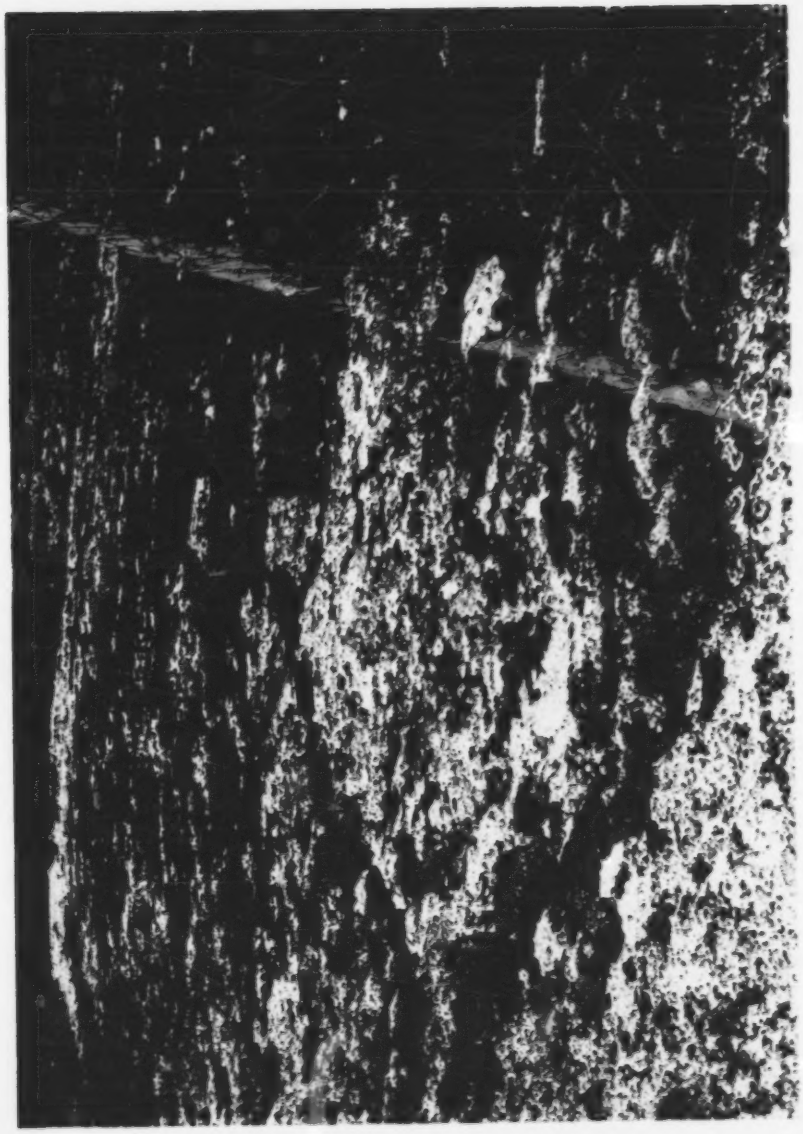


Fig. 48 Red Rock Lake Site, Circle, facing South.

Fig. 49 Map of Tulabi Falls Petroform Site.

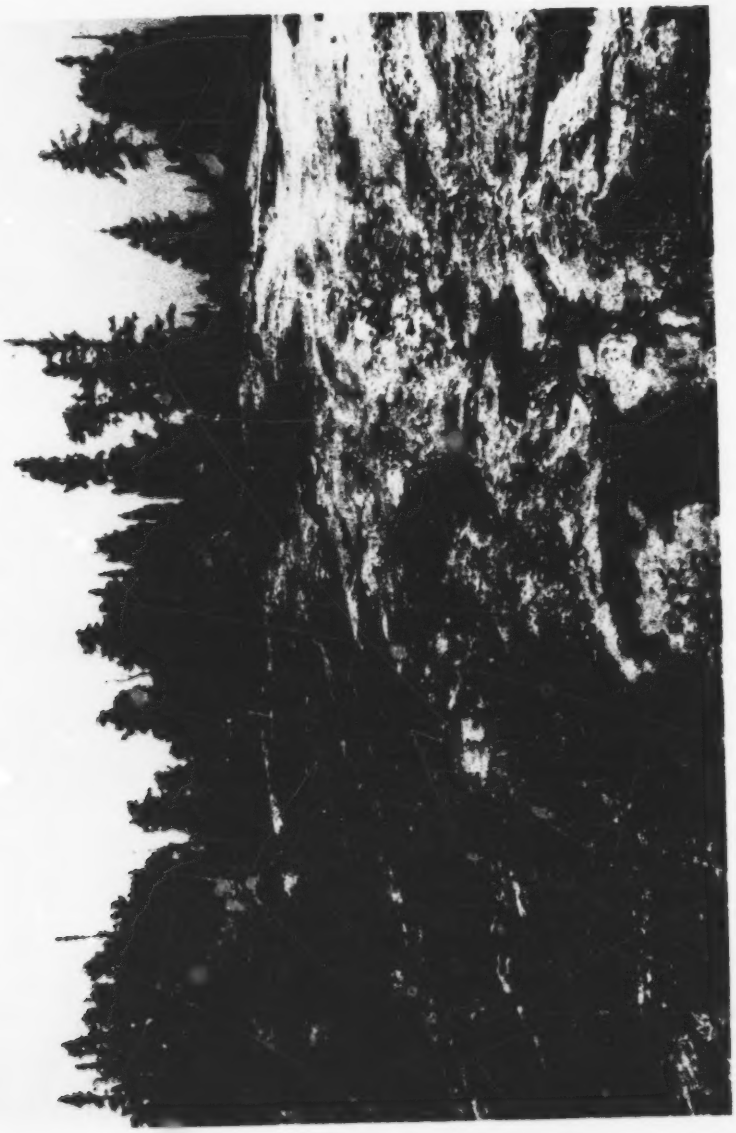


Fig. 50 Tulabi Falls Petroform Site, facing South.

of the feature above the portage around Tulabi Falls also suggests some authenticity.

This site has been disturbed within the last season and, due to increased access to the area, probably will not last more than one or two years unless some protective measures are taken. This is the northernmost petroform site now recorded and indicates that their distribution may continue much further north than was previously suspected.

The Ricing Camp Natural "Petroform Site" (Fig. 51)

This natural feature was at first thought to have a cultural origin. It is presented here as an example of the sort of thing which often leads to reports of sites. It is located at the confluence of the Rennie and Whiteshell Rivers. The ten or twelve large tabular boulders form an arc on a northeastward sloping outcrop. All of these boulders articulate in the same order they are found. The original slab of granite broke loose from above, breaking up as it slid downslope. The resulting arrangement, an impression of purposefully positioned elements.

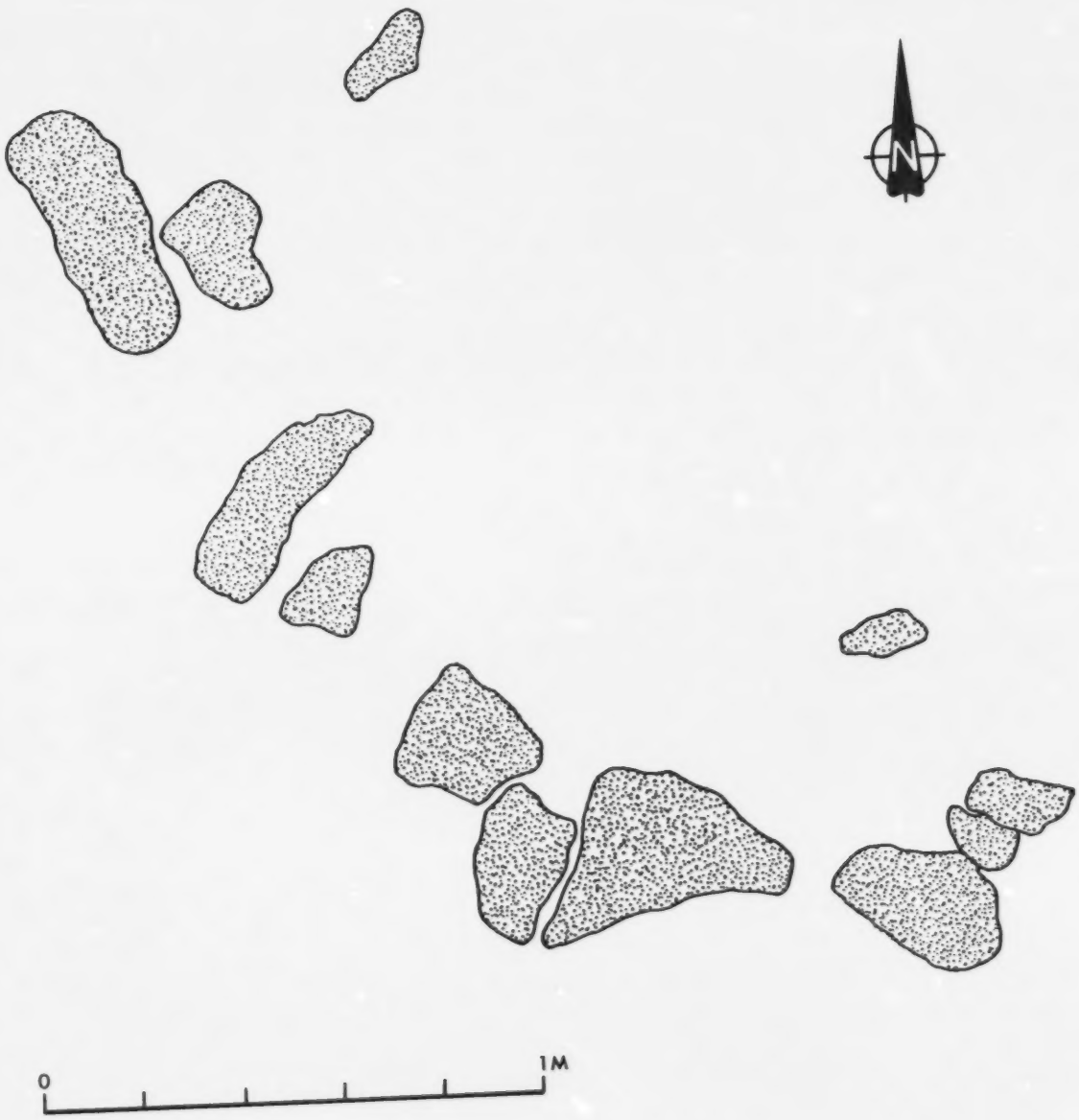


Fig. 51 Map of Ricing Camp Natural Feature.

TOWARDS A PETROFORM TYPOLOGY: SOUTHEASTERN MANITOBA IN THE GREAT PLAINS CONTEXT

INVENTORY

Petroforms, "boulder mosaics", and boulder effigies have been sporadically reported from locations throughout the Great Plains for almost a century. The information, however, is often difficult to obtain, scattered as it is through travellers' memoirs, museum pamphlets, introductory textbooks, accounts of folklore and local magazines, as well as in the weightier volumes of anthropological journals. It seems that the petroform phenomenon is as yet unknown to the compilers of bibliographies and indexes. The present study is therefore much indebted to those who have done previous research in the area. Dr. J. Steinbring (1970: pp. 234-7) in particular, gives thorough consideration to many of the Plains petroforms presented here. Dr. Steinbring, Dr. A.P. Buchner, and Mr. C. Wheeler have been most helpful in making available unpublished collections of petroform reports that are on file at the University of Winnipeg.

Appendix 1 provides a preliminary inventory of the reported Plains petroform sites known to the authors. It is hoped that with some consolidation of the literature on the subject, this inventory will be expanded and improved. A photograph or drawing of each feature is usually available in the source reference given (Appendix 1-2), but indications of size, orientation, and local environment are often missing. Appendix 1 does not include the Whiteshell petroforms, nor those of Eastern Manitoba which do not occur in a Plains environment.

These features are listed in Appendix 2.

Tipi rings, as defined by Kehoe (1958: 871-2) have been excluded from the Plains petroform inventory, as have "horseshoe" figures (Bayrock n.d.) which are difficult to distinguish from disturbed or gated tipi rings. Stone lines, or "trails", are not included in the list unless they constitute distinct and discrete features in their own right. Such "trails" often join two or more figures on Plains sites (compare the boulder trail linking the individual features at the Tie Creek Site [EaKv-14] in the Whiteshell) and are very difficult to quantify.

Medicine wheels have also been excluded from the survey. Time was limited, and it was felt that few comparable features were to be found in the Whiteshell area. It has been argued (Wheeler 1972) that Feature #3 at Tie Creek conforms to Grey's (1963: 30) definition of a medicine wheel. Grey himself, however, (1963: 30) points out that his definition is a very broad one, and that the distribution of medicine wheels will vary with the extent to which it is rigorously applied. If Grey's definition is strictly applied, all of the Whiteshell turtles must also be considered "medicine wheels". Kehoe (1960: 460) tells us that "the Blackfoot word for 'medicine wheel' refers only to the radiating lines", singling these out as the defining attribute. Feature #3 at Tie Creek does not display radiating lines. To eliminate the turtles from the category, we need only apply the very reasonable criterion of scale.

In compiling the inventory of known petroform sites in the Whiteshell and surrounding forest area (Appendix 2), all features that

have been mapped or photographed were included. In addition, certain verbal reports were included -- those that are specific as to location and form of the features involved, and which are provided by reporters familiar with the petroform phenomenon. A total of 62 features at 27 sites were recorded, and these have been arranged according to the realiability of their documentation. Features that have been grid-mapped (see page 68) are considered most reliably recorded, (Appendix 2.1, Total Features = 41) followed by those that have been clearly photographed (Appendix 2.2, Total Features = 6). Simple sketch maps (Appendix 2.3, Total Features = 8) are considered less reliable than photographs, and unsupported verbal reports come last of all (Appendix 2.4, Total Features = 7). Many of the features are, of course, no longer in existence. Some have been reconstructed since they were first reported. Along with information on the documentation and condition of the features are given their sizes and orientations, where these are known.

Petroform features of both regions have been classified as to Type, and then subclassified as to Form. Types occurring are recognizable Effigies, Geometrics, Indeterminate (where severely disturbed), and Ambiguous. This last Type category is intended to include those appended circles and linear arrangements which <u>may</u> represent effigies, but which do not definitely do so. It is felt that the immediate assignation of any irregular or enigmatic feature to the effigy class undermines the possibility of meaningful analysis.

The Formal subclassifications of Geometric Type in the Whiteshell area features include the Line, the Ellipse, the Circle, the Rectangle,

the Cross, and the Arc. Three of the Whiteshell features (# 1, 3, and 4 at Tie Creek) have been subclassified as "Complex" features. The three features are mutually distinct, and do not represent the same form. They have been classed together simply because they share the characteristics of complexity and uniqueness. Features #1 and #3 are considered Geometric but Feature #4 has been assigned to the Ambiguous Type, in recognition of its possible Effigy status (Steinbring 1970).

The Geometric figures listed in Appendix 1 include five linear arrangements (sites iv and xxiv), two triangles (sites xvi and xxii), one "arrow" feature (site v), one ellipse with appended lines (site xxi), and one right angle or "corner" figure (site v). None of the linear features has ever been hailed as a snake effigy. Their appurtenance to the Geometric class appears to be uncontested.

Among the true Effigies of the Whiteshell area, the forms are Snake, Turtle, and Human. Turtles are circular figures having six clear appendages, one of them (the head) being larger and more prominent than the others. Snake effigies also have a definite head, and the stones making up the body are graded in size down to the tail. Verbal reports do not suffice to assign a figure to the Effigy class in a definitive manner, in view of a distinct tendency for reporters to zoomorphize their finds. Certain of the simply circular features described in the present report (see for example TCA-1, Fig. 7) were first reported as turtles. It is likely that the Astwood and Jessica Lake petroforms have also been reported as such (see Steinbring's 1980 report [p. 289] on the Forbes/George Lake and the Big Whiteshell Turn-off "turtles").

Sites in the Whiteshell area have been classified according to their proximity and relationship to local water routes (a classification impossible in the Plains area due to lack of data). Certain of the sites listed in Appendix 2 are located on rock faces above river bends or rapids, along the routes required to portage around these. Other sites lie between lakes -- again, on the routes of portages leading from one lake to the other. These are called River (RP) and Lake Portage (LP) sites, respectively. Non-Portage (NP) sites are located off the routes of water travel. They are not areas through which travellers must inevitably pass. Rather, definite intention and a certain amount of effort is required to reach them.

Comparison of Appendices 1 and 2 suggests a much greater density of petroforms in the forest fringe than in the Plains area, especially given the square kilometres covered by each survey. This probably in large part reflects only the easier accessibility of local sources of information, and the intensity of recent petroform survey activity in Manitoba. Some notion of site density in the two areas, however, may perhaps be gleaned from comparison of the Whiteshell area and the Alberta samples. Having spent the years from 1964 to 1968 in reticule-mapping tipi ring, medicine wheel, and boulder effigy sites in Alberta, Bayrock (n.d.: 5) notes that after 1969, "no suitable sites were located" for such mapping.

FORM

Although both Plains and forest regions display Effigy and Geometric Type petroforms, the particular forms found in the two regions

are distinct. A preponderance of human over other types of features is apparent from examination of Appendix 1. Two human effigies have been reported in the Whiteshell, one rather dubious as to date of construction (see Steinbring 1980: 273), the other as to form (Sutton [1965] provides a map). Neither of these figures resembles the "typical" Plains box outline human figure (Fig. 52). Of the 33 figures from the Plains that are recognizable as to form, 15 are human effigy figures. Of these, eleven are of the box-outline type. One figure, from Cluny, Alberta (Kehoe and Kehoe 1959) is a solid, stick-outline type that is fairly close in form to the Whitehshell human figure from Bannock Point (Fig. 53).

The three human figures from Montana are constructed on a round body base, perhaps originally a tipi ring (Kehoe and Kehoe 1959). An intriguing similarity exists between the round-bodied figure reported from the Plains site of Rivers, Manitoba (Wheeler 1972) and Sutton's (1965) drawing of a "human effigy" seen by him in the Rainbow Falls area of the Whiteshell (Fig. 54). Although neither of these may actually represent humans -- the absence of arms or forelimbs is to be noted -- they are strikingly alike.

Two beautiful bison effigies are reported from the Plains. It is hardly surprising that no bison petroforms occur in the forest ecological zone.

Several reports of turtle figures on the Plains are to be found, including some that imply great frequency of occurrence of this type of feature. Wilson (1975: 5) speaks of the Big Horn Medicine Wheel as "an elaborate effigy, along the lines of what we often call

Fig. 52 Human Effigy Figure from Cabin Lake, Southwestern Saskatchewan (redrawn from Pohorecky 1970: p. 31).

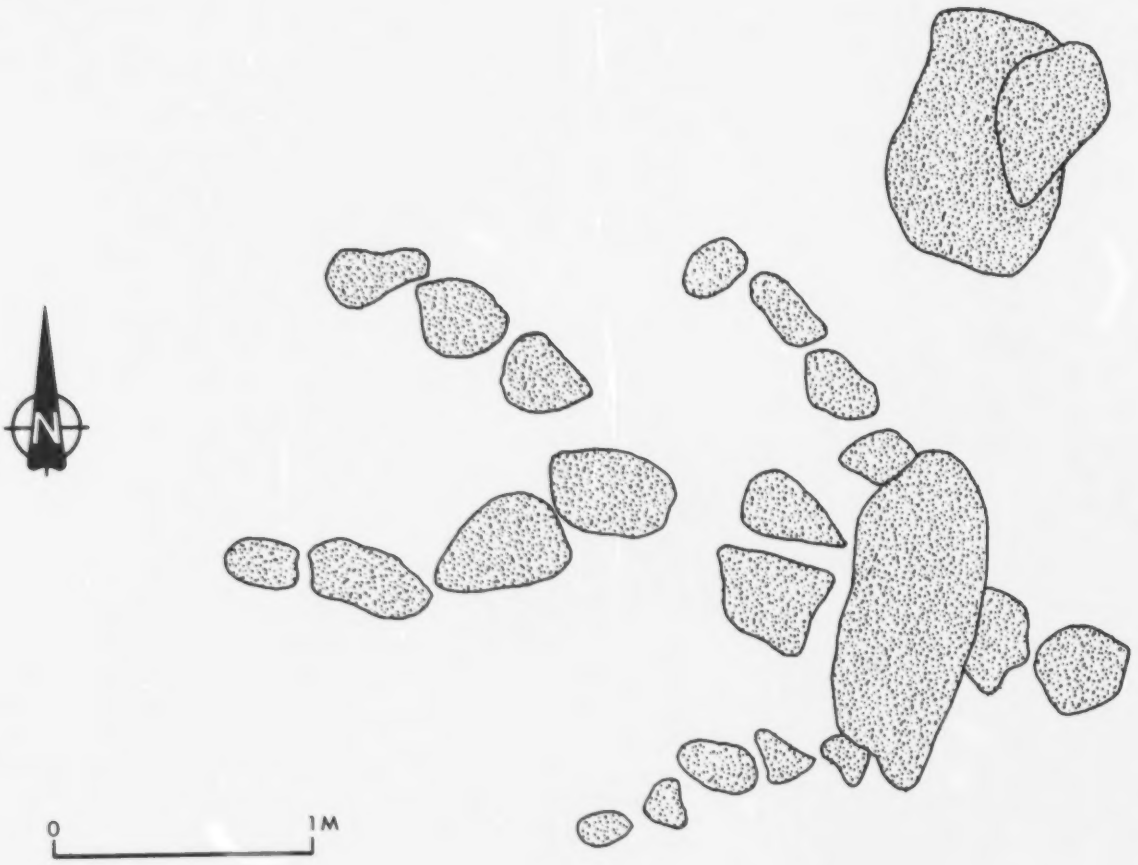


Fig. 53 Human Effigy Figure from Bannock Point, Whiteshell Provincial Park, Manitoba (courtesy of A.P. Buchner).

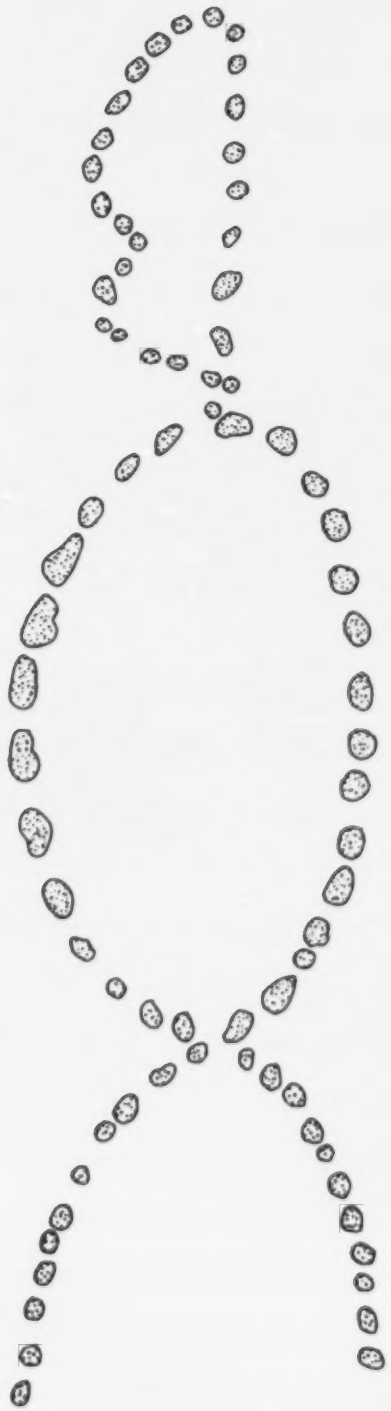


Fig. 54 Possible Human Effigy Figure from the Rainbow Falls Area, Whiteshell Provincial Park, Manitoba (Redrawn from Sutton, 1965).

'turtles' on the Northwestern Plains", while Kehoe (1965: 29) claims that "turtles and men are the favourite themes for Saskatchewan's boulder effigies." In fact, not one report exists that, on close examination, will furnish a clear example of the type. The three quadrupeds listed in Appendix 1 as "other effigy" features have all been described, at various times, as "turtles". The Wessington Springs and Pierre figures (sites xii and xiii) have long, rodent-like tails. The Minton "Turtle" (site x), meanwhile, possesses unmistakeable ears. Bayrock (n.d.) has reported four "turtles" at the Consort 1 Site. These were associated with 73 tipi rings, of which Bayrock furnishes excellent maps, and from which, alas, his "turtles" are indistinguishable. Information on true examples of Plains petroform turtles would be welcomed by the authors. In the absence of such examples, it can only be concluded that a kind of turtlemania has permeated the literature, and the consciousness of researchers.

A similar enthusiasm has greatly multiplied the number of "turtle" and "snake" effigies in the Whiteshell and surrounding areas, although here, bona fide examples of such features have actually been documented (see Figs. 22, 26 and 45). The Whiteshell researcher must recognize four confirmed and unmistakeable turtle figures in the sample. In addition, two turtles are reported for which good sketch maps are available. Feature #4 of the Rainbow Falls Site may be a disturbed turtle, as may a configuration reported by Hlady (1950) of a circle with "forelimb" and "head" appendages, in the same area.

Two undisputed snake figures exist in the Whiteshell: at Pine Point, and at Bannock Point. A sketch map exists of a snake

effigy at the north end of Big Whiteshell Lake (Wheeler n.d.). The two features of Lac du Bois are surely effigies of some kind, but the "arms" of the larger feature leave some doubt as to exact identification. Four reports, of varying degrees of certainty, bring news of linear features in eastern Manitoba. Those may be snake effigies, or may simply be alignments of boulders -- geometric rather than effigy type figures. The enormous snake effigy found in South Dakota is more than twice as large as any other figure, from Plains or forest. All the possible Snake effigies in eastern Manitoba are single line constructions, of under 12 metres in length. The 360-foot (approximately 108 metres) double-line Dakotan effigy, complete with facial features, is of a different order of magnitude.

SITUATION

Available data as to situation of Plains petroforms is scanty and uneven. In the Whiteshell area, figures are found on high rock outcrops, although rarely at the highest point of a particular rock ridge. Although rock outcrops themselves occur less frequently on the Plains, petroforms here also are found on high ground. Some Plains reporters (e.g., Lewis 1889; Grey 1963) mention that the figures, although highly placed, do not occupy the highest position in the vicinity. On the other hand, Kehoe and Kehoe (1959) inform us that the Cluny, Alberta, figure is located at the edge of a coulee, and at the foot of a bluff -- presumably at the lowest point among the local landforms.

Among the Whiteshell features, a tendency for certain forms

to co-vary with site type has been observed. With our small sample, these are tentatively offered as indications of possible avenues of research. The majority of ellipses (four out of five reports) occur at Non-Portage sites, while effigy figures tend to occur at Lake and River Portage sites. Feature #4 at Tie Creek, if considered on effigy figure, constitutes an exception to this generalization, as do the two "snake" features at the slightly anomalous Non-Portage site of Lac du Bois.

When the class of circles is subdivided, it is found that those simple circles having a single centre stone or no centre stone at all (four so far reported) occur on Portage sites. Those circles found on Non-Portage sites have long appendages, or are marked by multiple boulders in the interior.

SIZE

When the Whiteshell features are grouped according to size and situation, an interesting pattern emerges in which the Non-Portage/Lake and River Portage distinction among sites is emphasized (see Fig. 55). Features at Portage sites cluster strongly in the 0-5 metre range. The average feature size for this category is 5.94 metres. The features at Non-Portage sites do not show any definite clustering. The average size for the features of this type of site is 14.12 metres.

Portage features appear to be more uniform in size than Non-Portage features. This may be connected in some way to the fact that features of the Portage sites are also more constant in terms of forms. That is, Portage sites have fewer "unique" features than Non-

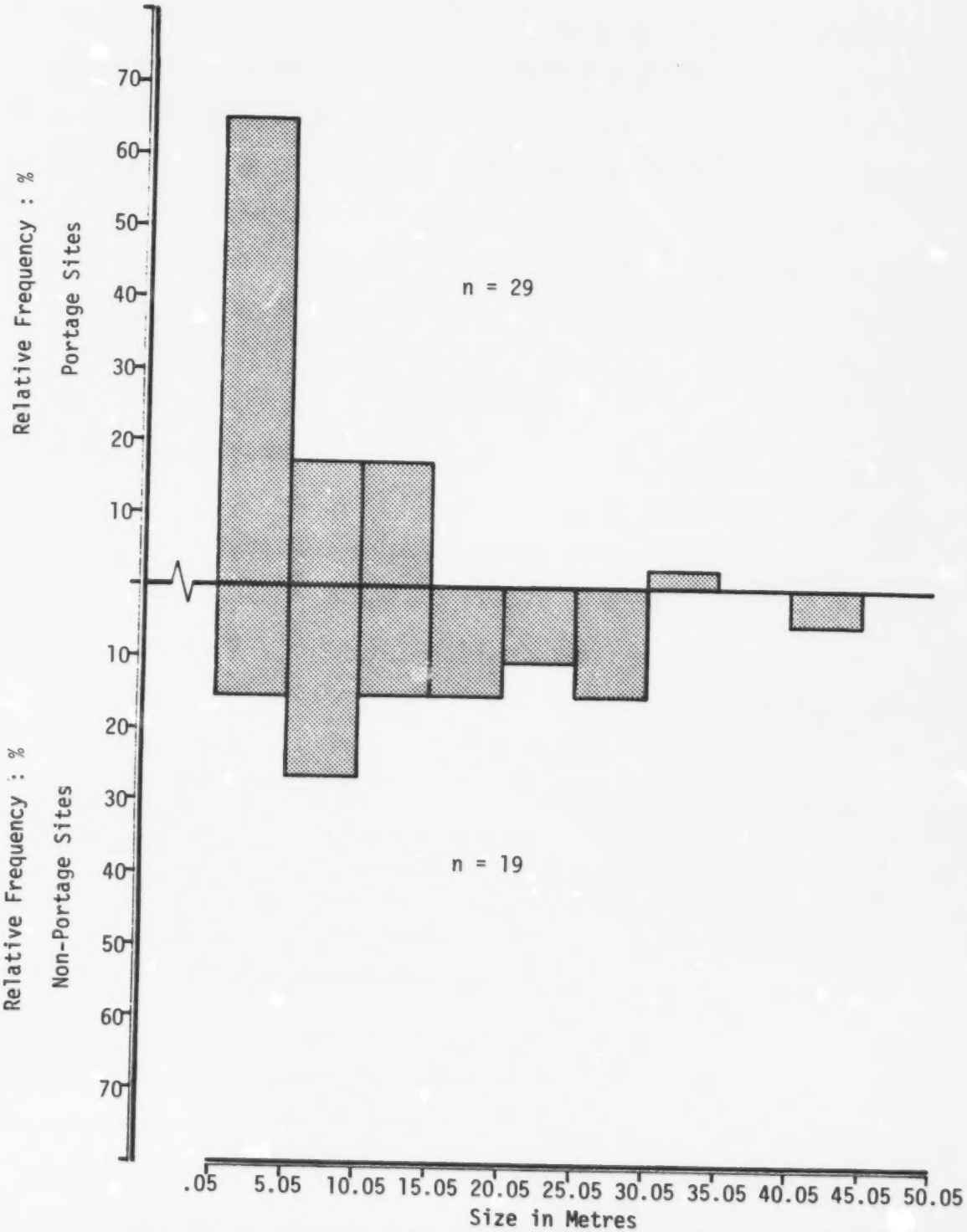


Fig. 55 Histogram showing size ranges for Southeastern Manitoba Petroforms.

Portage sites.

Petroform features found on the Plains tend to be slightly larger than those of the forest. The average length of the Plains petroforms according to available data is about 15 metres. That of a forest petroform is about 10 metres for the group as a whole. Whiteshell area petroforms cluster at 0-5 metres in length, most Plains petroforms at 5-10 metres.

ORIENTATION

There is little overall consistency in orientation among petroform features on the Plains, when all forms are indiscriminately assessed. Buchner (1976a), however, has pointed out that petroform orientation seems to become significant when figures are subclassified as to form. In particular, linear and elliptical petroforms share a general northeasterly/southwesterly orientation. The linear features reported at Pakowki, Alberta, and at Rocky Mountain Park in Colorado are all aligned roughly along a NE/SW axis. The one ellipse reported from the Plains (Appendix 1 site xxi) also displays this orientation (Buchner 1976a). It is noted that, in the Whiteshell area, simple circles tend to open to the west, where openings are apparent. Recent investigations (Eddy 1975; Kehoe and Kehoe 1976; Buchner 1976a, n.d.) have explored the possibility of astronomical significance in the orientations of boulder features. Further such study may reveal attributes common to petroforms of the Plains and of the forest fringe.

Effigy figures and appended circles, whether in Plains or forest area, show no consistency in orientation, (note that the Pine

Point Snake, an effigy rather than a geometric "linear", has its head to the SE). Data from the Rainbow Falls and Jessica Lake sites, however, (see above), suggest that turtle and circle figures may have a directional function. It may be that if, as Buchner (1976a: 27) suggests, "linear features are correlative with solar events while ellipses align with lunar or even planetary events", turtles and circles in the Whiteshell indicate "terrestrial events" -- those of local geography.

A route over land and water, marked both by petroforms and by stone slab cairns, runs from Red Rock Lake in the south and Molloy Lake in the east to Basket Falls in the north. At the Basket Falls/Rainbow Falls site, a line of cairns directs one between the petroform features. The line seems to continue east of the highway. Here, the cairns parallel the Jessica Lake Petroform site. While there is no way of establishing a more direct relationship between the cairns and the petroforms, they do at least function in the same way. Petroforms are often most easily found by following the cairns.

Cairns are found at the Jessica Exit petroform site between the entrance and the exit of the Whiteshell River. They are also found in the area of the Scarfe Site, between the north bay of Jessica Lake and Molloy Lake; and near the Molloy Lake Site, between Molloy Lake and the south bay of Jessica Lake. At least two cairns are found between the south bay of Jessica Lake and Red Rock Lake near the Red Rock Lake Site. These cairns point to Red Rock Lake just as the turtle effigy does. During the survey, it was expected that a petroform site would be found on the heavily travelled portage between Lone Island Lake and Molloy Lake. While some arrangements of boulders were found

which could have been the remains of petroforms, none were definite features. However, features may have been destroyed, or it may simply be that petroform markers were not necessary as the portage is very short (under 400 metres).

North of Basket Falls, cairns continue along the Whiteshell River to Betula Lake. On this stretch there are no petroforms. The only portages here are low and within a few metres of the river. This situation does suggest some differences of function between cairns and petroforms. At Pine Point, the feature seems to direct one over a path cutting across a loop of the Whiteshell River, avoiding a long series of rapids. Mr. Bernard French of the Manitoba Parks Branch informs us (personal communication, 1982) that a "turtle" existed near the snake in the late 1940s. A second "turtle" (probably a victim of blasting for the control dam) was reported by M. Cotter on the west bank of the Whiteshell River near its exit from Betula Lake. This is the point where a portage would most conveniently return to the water after by-passing the rapids. This area also has some stone slab cairns.

Continuing downstream (north) on the Whiteshell River, we come to the next set of rapids and falls, and the next petroform site, Bannock Point. Sutton (1965) reports that this site also had cairns. We cannot, unfortunately, be certain that the cairns here marked a trail, but it is a possibility. The Bannock Point Site is the last point on the Whiteshell River that necessitates a portage, and is the last Portage-type petroform site on the river.

There are only three Portage-type sites in our sample that are not on the Winnipeg River. Two of these, one on the Crowduck Lake

portage and one on the portage between Big Whiteshell Lake and Bedford Lake, are accessible via the Whiteshell River. These two sites, now both destroyed, have scores of recent cairns around them. Almost every available boulder in the area seems to have been recently piled into a cairn. Near the Crowduck Lake portage, one feels like part of a surrealist painting. In some areas, little cairns occur every 3 or 4 metres. It is likely that any earlier cairns have been transformed, along with the petroform features of the two sites.

At the Tulabi Falls Portage Site, only the immediate surroundings were examined. The presence of cairns cannot be confirmed or denied.

The Tie Creek Area Sites and the Tie Creek Site, Non-Portage Type sites farther down the Whiteshell River from Bannock Point, do not feature angled stone slab cairns. White Lake, also a Non-Portage site, is similarly devoid of cairns. It will be interesting to see if the as yet unconfirmed site south of Hart Lake reported by Willard Anderson of the Parks Branch has cairns associated with it. This site would be of the Non-Portage type.

Described here is a route marked by petroforms along the lower Whiteshell River. This route, alternating over water and land, would considerably cut down journey time for a lightly burdened traveller if canoes were kept cached on the shores of the lakes. Such a route may have been useful during rice harvesting (cf. Buchner and Callaghan 1980) in this area of its abundance. Presumably, groups of related people would be more concentrated in the area at this time of year, and might desire quick communication with friends and relatives before

winter, when such communication would not have been easy.

This is highly speculative of course, and cannot be proven absolutely with a small sample. It cannot however, be denied, that the marked route exists. The cairns seem to be related functionally if not temporally to the Portage-type petroforms. In terms of lichen growth, the cairns usually appear as old as the adjacent petroforms. However, subjective visual examination of the lichen growth must be used with caution. The lichen growth on the 1937 surveyor's cairn (Fig. 56) above the southwest shore of Jessica Lake would make it as old as any petroform. Further, the lichen growth around the snake and turtle effigys reconstructed in the early 1960s (Sutton 1965) at the Bannock Point Site suggests greater antiquity than some undisturbed features, of which photographs taken much earlier exist.

It is of course not certain whether the "road-sign" function was the one intended by the petroform builders. Certainly it was not the only one. The quote from Alexander MacKenzie at the beginning of this report suggests a function more significant than that of simple route markers. But the present importance of this route hypothesis is in another area. The hypothesis does successfully predict the locations of one major classification of petroforms in the forest. It is a useful tool for gathering more data by which we may eventually better understand the functions of forest petroforms.

Fig. 56 Surveyor's Cairn, 1937 at Jessica Lake.

CONCLUSIONS AND RECOMMENDATIONS

PLAINS RELATIONSHIPS

Although obviously using a common medium of expression, the boulder outlines of the Plains show great differences from those of southeastern Manitoba. In terms of the forms represented, the two areas are almost mutually exclusive. The preponderant Plains effigy form is not found in Manitoba, and the turtle, the forest area's most popular effigy, is absent from the Plains. Of all the forms reported, only five can be said to be common to both regions, and one of these forms is the simple linear arrangement. The Plains ellipse has appendages not seen in the Whiteshell area, and the enormous Dakotan snake is difficult to compare with the Manitoba examples. The two Whiteshell "human" figures remain intriguing.

Orientation studies of geometric figures on the Plains may prove more fruitful in terms of establishing possible links with eastern Manitoba than further studies of form. Studies of local environments and proximity to travel routes would also be very enlightening.

DATING

A certain amount of ethnographic information has been collected regarding the origin and function of Plains petroforms (see especially Kehoe and Kehoe 1959). According to informants, the effigies are of relatively recent manufacture, and serve to commemorate some person or event of the past. Often, even the names of the

individuals involved are still remembered.

Dating of the Forest petroforms of southeastern Manitoba is an extremely difficult task. If it is indeed true that no direct relationship can be assumed between the Forest and Plains petroforms, we are left with only two ethnographic references to petroforms in southeastern Manitoba. The first of these is by Alexander MacKenzie (1927), who describes the use of portage-type petroforms. However, he does not indicate whether the users were also the builders.

The second reference is recent. Hall (1960) indicates that petroforms were used in ceremonies of the Ojibwa Grand Medicine Society. This information was obtained from Old Joe Black, reputedly one hundred years old, of the Hollow Water Band. It is not certain whether he was actually referring to petroform use or to some other practise of the Medicine Society (Steinbring 1970). Certainly he was not referring to the portage-type petroforms. He says that ordinary members of the band did not dare to go near them and it would be very difficult to avoid the portage-type petroforms. On the other hand, given Alexander MacKenzie's historic account, it may be unwise to disregard this more recent report altogether.

The fact that the Lac du Bois petroforms seem to be still in use should be kept in mind here. Steinbring (1980) writes: "Additionally, Mr. [R.] Tuokko reports possible signs of recent use of the petroforms as evidenced by traces of burnt tobacco on them. This would be in accord with many Algonkian rituals, and those of the Saulteau in particular".

Buchner and Callaghan (1980) suggest a Laurel culture affiliation

(ca. A.D. 500) for southeastern Manitoba petroforms. This suggestion is based upon the assumption that the Astwood campsite and the Astwood petroforms are associated. The proposed association is surmised from the close proximity of the two sites, and from the fact that no other campsites have been found within a day's travel of the petroform features. As was stated (Buchner and Callaghan 1980: 93) the "...validity of the association can neither be "proven" nor disproven, as no criteria or procedures exist which could serve this end."

Wheeler (1972) shows a continuity of occupation of southeastern Manitoba by Algonkian peoples since Laurel times. It is possible that a tradition of petroform-building began in Laurel times and that at least some use has continued until the present. While we cannot as yet assign the construction of petroforms to any particular group, historic or prehistoric, we can at least say with some confidence that they are of the Algonkian tradition and perhaps span a great deal of time.

A preliminary comparison of petroform distributions with those of the Woodland cultures of the Whiteshell and surrounding area (particularly to the north and east) was attempted in 1982. Steinbring (1970) points out the mutually exclusive distributions of petroforms and pictographs across the Manitoba/Ontario border. While all three Woodland cultures -- Laurel, Blackduck and Selkirk -- are found throughout the range of both expressive forms, it was felt that the relative densities of the cultural occupations might differ in a manner correlative with petroform and/or pictograph distributions.

A method was devised in which vessel counts from multi-component sites of neighbouring "petroform" and "pictograph" areas were

to be compared as to simple ratio of cultural occupations. Admittedly, only very gross differences in occupation density could be expected to emerge, but the exercise would indicate whether more refined methods of comparison were worth exploring. The ratio method seems particularly necessary considering the temporal overlap of Blackduck and Selkirk occupations within the petroform area. The overlap may have been quite long-term, given the radiocarbon date for Blackduck of A.D. 1870 ± 40 DIC 1723 (corrected to 1772 ± 50) at the Cemetery Point Site (A.P. Buchner, pers. comm.).

Two problems arose when trying to put this test into practice. One is our own lack of knowledge of the northern distribution of petroforms. The Tulabi Falls petroform indicates that they occur farther north than previously expected. Since this site is on the old route into the Manigotagan River system (A.P. Buchner, pers. comm.), it is conceivable that petroform sites continue as far as that system. The second problem is a lack of published data on excavated sites immediately to the east. Both of these problems should be overcome in the near future by the use of the portage-trail hypothesis to locate petroforms and by on-going work in the Lake of the Woods area.

Systematic studies of lichen growth at petroform sites could give us a "ball-park" figure for the period of petroform construction and could test the hypothesis of continuity of the tradition throughout the Woodland period. So far, detailed lichenometric studies are the only dating methods applicable to petroforms. Simple visual examination of lichen growth is a very limited method of age estimation.

It is possible that new techniques could be developed to date

petroforms. One such avenue lies in the determination of the chemical make-up of the outcrop surface under the largest boulders, where glacial polish remains undisturbed. Some estimate of age could perhaps be obtained by comparing the rock surfaces underneath petroform elements with these undisturbed surfaces, and with surfaces that have been exposed since glacial retreat. At best, such a method would produce a similar grossness of count to that of lichenometric studies, but it would be an independent test. The groundwork for such geological measurement has yet to be undertaken.

TYPOLOGY

In the previous chapter, analysis was directed towards establishing a tentative typology for the Forest petroforms of south-eastern Manitoba. The major division between those occurring at Portage and at Non-portage type sites is quite clear. The division based on form separates Effigy from Geometric figures. These two matricies interlock somewhat, and we find that Effigies occur most often at Portage sites. Feature 4 at Tie Creek -- a dubious Effigy at best -- and the two "snakes" at Lac du Bois constitute the only exceptions.

The Lac du Bois petroforms, while near the water, are apparently not situated on any conceivable portage (T. Howe, pers. comm.). They are also somewhat anomalous in form since, unlike snake and turtle effigies which clearly represent "real" creatures, one of the Lac du Bois features has been described as a snake with arm-like appendages (Steinbring 1980). Detailed mapping and survey of this site is urgently required. Perhaps a sub-division within the Non-portage

type site exists. A subdivision of Portage-type sites based on effigy differences between river and lake portages is also hinted at (the two best examples of snake effigies occur at portages).

Size also appears to differ between features at Portage and Non-portage type sites. The latter generally display larger figures. It is difficult to assess whether or not this is a matter of utilization of available space, necessarily more limited at portages.

Orientation seems to have some significance in terms of form, particularly as regards linear and elliptical forms. Some types of circles may also have significance in orientation. Turtles and snakes may function in part as local direction indicators.

This leaves us with a sketch of a typology which can easily be tested. The reported (W. Anderson, pers. comm.) but unconfirmed site south of Hart Lake will be very important in this testing. As a Non-portage type site, it should ideally be composed only of geometrics and these should be of relatively large size. Features here will also increase our knowledge of orientation. It is further expected that other sites will be located in this general area, analogous to situations at the Tie Creek Area Sites. Investigations along the Bird River, along Sweet Creek, and at Bernard Lake should also greatly increase the available sample and expand the typology presented.

MANAGEMENT

While ritual destruction of petroforms may have taken place in the past (the nature of the disturbance at TCA-6, for example, suggests this kind of destruction), it is quite clear that a large

portion of our potential sample has been ruined over the last two decades by neglectful development (Sutton 1965) or by deliberate vandalism (C. Clark, pers. comm.). These two types of destruction are closely linked. Development, even when directed away from petroform sites, opens new areas to increased population pressure by humans. The more people in the area, the greater the overflow into the less accessible sections and the greater the need for more development. A firmer typology and a much clearer picture of the meaning of the petroforms might already be ours, if it had not been for this loss of much of the sample.

While destruction of sites by vandals cannot be totally eliminated, destruction by developers certainly can. A systematic survey is essential if new roads and trails are to be redirected. Since much of the known sample is in a provincial park it is entirely unrealistic to propose restricting access to large areas. The fencing off of the Tie Creek Site by the Province was an extremely important move. The Tie Creek Site as well as being the largest and in many ways most unique petroform site in North America presents great possibilities for scientific research and interpretation. However, fencing off of the numerous smaller sites is not feasible financially, nor is it likely to be very effective.

To reduce vandalism, a public education program must be undertaken. If such a program is to be effective, it must rely heavily on interpretation, and must provide for the dissemination of information to the public. It must capture imaginations by telling the "story" of the petroforms. The idea of setting up an interpretive centre at

Bannock Point is a good one, and should be compatible with the overall function of the Whiteshell Provincial Park. The kind of meaningful interpretation we hope for depends on the enlargement of the present sample. Extensive survey of the area is necessary here too.

We feel that the petroform sites of southeastern Manitoba offer an excellent example of the inseparability of resource management from analytical research in the field of archaeology. Analysis of available data may be useful in predicting locations of petroforms. This is now particularly true of the Portage type features, which are the most endangered. The ability to predict locations may reduce the cost of petroform protection from development.

Implicit in prediction is understanding, which, of course, is necessary in the presentation of an interesting and informative "story" to the public. By this means, appreciation and awareness of this valuable heritage resource can be used to reduce vandalism and also the cost of protection.

The present report demonstrates that meaningful interpretation of petroform data is a possibility and that predictions can be made. Additional information is as essential to ongoing analysis as it is to the preservation of documented features.

APPENDIX 1.1 PRELIMINARY INVENTORY OF KNOWN PLAINS PETROFORM SITES

		Montana			Colorado	Wyoming	Saskatchewan					South Dakota				Manitoba		Alberta									Minn.	Total
	Site	i	ii	iii	iv	v	vi	vii	viii	ix	x	xi	xii	xiii	xiv	xv	xvi	xvii	xviii	xix	xx	xxi	xxii	xxiii	xxiv	xxv	xxvi	xxvii	
Effigy	Human	1	1	1				1	1	1		2	1					3	1	1	1								15
	Bison						1																					1	2
	Snake														1														1
	Other Effigy										1		1	1															3
Geometrics	Line				1																				4				5
	Other Geo-metric					2											1					1	1						5
Ambiguous "human"																1													1
Indeterminate				2								1												1		1	1	3	9
Total		1	1	3	1	2	1	1	1	1	1	3	1	1	1	1	1	3	1	1	1	1	1	1	4	1	1	4	41

APPENDIX 1.2 KEY TO PLAINS PETROFORM SITES

i	Bozeman, Montana (Kehoe and Kehoe 1959)
ii	Landslide Butte, Montana (Kehoe and Kehoe 1959)
iii	Pryor, Montana (Simms 1903)
iv	Rocky Mountain Park, Colorado (Husted 1963)
v	Big Horn, Wyoming (Grey 1963)
vi	"South Central", Saskatchewan (Kehoe 1965)
vii	Cabri Lake, Saskatchewan (Pohorecky 1970)
viii	Kyle, Saskatchewan (Poherecky 1970)
ix	Onion Lake, Saskatchewan (Kehoe 1965)
x	Minton, Saskatchewan (Kehoe and Kehoe 1976)
xi	Punished Woman's Hill, South Dakota (Lewis 1889)
xii	Wessington Springs, South Dakota (Lewis 1891)
xiii	Pierre, South Dakota (Lewis 1889)
xiv	Blunt, South Dakota (Lewis 1889)
xv	Rivers, Manitoba (Wheeler, 1972)
xvi	Stonewall, Manitoba (Stonewall Argus 1978)
xvii	Crawling Coulee, Alberta (Bayrock n.d.; Bryan 1967)
xviii	Sandgathe, Alberta (Bayrock n.d.)
xix	Consort II, Alberta (Bayrock n.d.; Wormington and Forbis 1965)
xx	Cluny, Alberta (Kehoe and Kehoe 1959)
xxi	Duchess, or Suitor, Alberta (Bryan 1967 and Bayrock n.d.; respectively)
xxii	Consort III, Alberta (Bayrock n.d.)
xxiii	Rumsey Cairn, Alberta (Wormington and Forbis 1965)
xxiv	Pakowki, Alberta (Bayrock n.d.)
xxv	British Block Cairn, Alberta (Wormington and Forbis 1965)
xxvi	Grassy Lake Cairn, Alberta (Wormington and Forbis 1965)
xxvii	Murray County, Minnesota (Lewis 1890)

APPENDIX 2.1

PRELIMINARY INVENTORY OF KNOWN WHITESHELL AND AREA PETROFORMS GRID-MAPPED

Site Name	Borden # Feature #	Type	Form	Length	Orientation	Situation	Record	Condition	Reference
Jessica Exit	1	Geom	Line	4.5 m	NE/SW	LP	map	good	Buchner 1976a
Jessica Exit	2	Geom	Line	3.6 m	NE/SW	LP	map	good	Buchner 1976a
Jessica Exit	3	Geom	Line	1.8 m	NE/SW	LP	map	good	Buchner 1976a
Reed Falls	1	Geom	Circle	1.5 m	n.a.	LP	map	good	WAP. 82
Redrock Lake	1	Effigy	Turtle	3.9 m	NE	LP	map	fair	WAP. 82
Redrock Lake	2	Geom	Circle	3.2 m	gate W.	LP	map	good	WAP. 82
Jessica Lake	1	Indeterminate		3.9 m		LP	map	v. disturbed	WAP. 82
Jessica Lake	2	Geom	Circle	1.9 m	n.a.	LP	map	good	WAP. 82
Jessica Lake	3	Indeterminate		3.6 m		LP	map	v. disturbed	WAP. 82
Jessica Lake	4	Geom	Circle	2.7 m	SW	LP	map	fair	WAP. 82
Jessica Lake	5	Indeterminate		3.4 m		LP	map	v. disturbed	WAP. 82
Astwood	1	Indeterminate		4.2 m	NE/SW	LP	map	v. disturbed	Buchner 1976
Astwood	2	Geom	Ellipse	12.0 m	NE/SW	LP	map	good	Buchner & Callagnan 1980
Tulabi Falls	1	Ambiguous	Line/ Snake	12.0 m	NE/SW	LP	map	good	WAP. 82
Bannock Point	1	Effigy	Snake	3.5 m	E	RP	map	reconstructed	Sutton 1965
Bannock Point	2	Effigy	Turtle	3.5 m	W	RP	mpa	reconstructed	Sutton 1965

Site Name	Borden # Feature #	Type	Form	Length	Orientation	Situation	Record	Condition	Reference
Bannock Point	3	Geom	Line	35.2 m		RP	map	reconstructed	Sutton 1965
Bannock Point	4	Effigy	Human	3.2 m		RP	map	good	Buchner n.d.
Rainbow Falls	1	Effigy	Turtle	2.9 m	SE	LP	map	good	Sutton 65 WAP. 82
Rainbow Falls	2	Geom	Circle	5.7 m		LP	map	disturbed	Sutton 65 WAP. 82
Rainbow Falls	3	Effigy	Turtle	3.0 m	E	LP	map	good	Sutton 65 WAP. 82
Rainbow Falls	4	Ambiguous	Circle/ Turtle	3.4 m	E/W	LP	map	fair	Buchner n.d.
Pine Point	1	Effigy	Snake	9.0 m	SE	RP	map	fair	Buchner 76a
Scarfe	1	Geom	Circle	5.4 m	gate W	LP	map	good	Buchner 76a
Scarfe	2	Geom	Line	9.0 m	NE/SW	LP	map	good	Buchner 76a
Molloy Lake	1	Geom	Rectangle	5.4 m	NE/SW	LP	map	good	Buchner 76a
White Lake	1	Geom	Ellipse	10.2 m	NE/SW	NP	map	good	Buchner 76a
White Lake	2	Geom	Arc	4.1 m	NE/SW	NP	map	good	WAP 1982
Tie Creek Area 1	1	Geom	Circle	3.3 m	n.a.	NP	map	good	WAP 1982
Tie Creek Area 2	1	Geom	Ellipse	9.4 m	NE/SW	NP	map	good	WAP 1982
Tie Creek Area 3	1	Geom	Appended Circle	18.6 m	NE	NP	map	disturbed	WAP 1982
Tie Creek Area 5	1	Geom	Line	6.8	NE/SW	NP	map	good	WAP 1982
Tie Creek Area 6	1	Geom	Appended Circle	15.1	NE	NP	map	disturbed	WAP 1982
Tie Creek	1	Geom	Complex	42.7	NE/SW	NP	map	good	Buchner 76a
Tie Creek	2	Geom	Ellipse	24.4	NE/SW	NP	map	good	Buchner 76a

Site Name	Borden # Feature #	Type	Form	Length	Orientation	Situation	Record	Condition	Reference
Tie Creek	3	Geom	Complex	25.9 m	N/S	NP	map	good	Buchner 76a
Tie Creek	4	Ambiguous	Complex	25.9 m	N/S	NP	map	good	Buchner 76a
Tie Creek	5	Geom	Circle	6.1 m	gate W	NP	map	good	Buchner 76a
Tie Creek	6	Geom	Line	3.6	NE/SW	NP	map	good	Buchner 76a
Tie Creek	7	Geom	Circle	12.2 m	gate W	NP	map	disturbed	Buchner 76a
Tie Creek	8	Geom	Appended Circle	24.4 m	NW/SE	NP	map	disturbed	Buchner 76a
Pistol Lake Ontario	1	Effigy	Turtle				map	?	Reid in Steinbring 80

APPENDIX 2.2

PRELIMINARY INVENTORY OF KNOWN WHITESHELL AND AREA PETROFORMS PHOTOGRAPHED

Site Name	Borden # Feature #	Type	Form	Length	Orientation	Situation	Record	Condition	Reference
Rainbow Falls	7	Ambiguous	Line/ Snake	-	E/W	LP	photo	destroyed	Leechman 1949
Bannock Point	5	Geom	Cross	-	-	RP	photo	fair	Sutton 1965
Tie Creek Area 4	1	Geom	Appended Ellipse	5.5 m	N/S	NP	photo	good	WAP 82
Tie Creek Area 7	1	Geom	Line	15.2 m	NW/SE	NP	photo	good	Wells & Matthews in Steinbring 1980
Lac du Bois	1	Effigy	Snake?	8.2 m	NW/SE	NP	photo	good	T. Howe in Steinbring 1980
Lac du Bois	2	Effigy	Snake?	6.7 m	SW/NE	NP	photo	good	T. Howe in Steinbring 1980

APPENDIX 2.3

PRELIMINARY INVENTORY OF KNOWN WHITESHELL AND AREA PETROFORMS SKETCH-MAPPED

Site Name	Borden # Feature #	Type	Form	Length	Orientation	Situation	Record	Condition	Reference
Big Whiteshell	1	Effigy	Snake	--	E/W	LP	Sketch	Destroyed	Wheeler 1972
	2	Effigy	Turtle	--	E/W	LP	Sketch	Destroyed	Wheeler 1972
Bernard Lake	1	Geom	Circle	5.0 m	n.a.	LP	Sketch	Unknown	Tyson in Steinbring 1980
Pine Point	3	Geom	Appended Circle	--		RP	Sketch	Destroyed	Wheeler 1972
Rainbow Falls	5	Effigy	Turtle	12.8		LP	Sketch	Destroyed	Hlady 1950
	6	Indeterminate		--		LP	Sketch	Destroyed	Hlady 1950
	8	Ambiguous	Circle/ Turtle	--		LP	Sketch	Destroyed	Hlady 1950
	9	Ambiguous	"Human"	--		LP	Sketch	Destroyed	Sutton 1965

APPENDIX 2.4

PRELIMINARY INVENTORY OF KNOWN WHITESHELL AND AREA PETROFORMS VERBAL REPORTS

Site Name	Borden # Feature #	Type	Form	Length	Orientation	Situation	Record	Condition	Reference
Lac du Bonnet	1	Geom	Circle	--	--	RP	Verbal	Destroyed	Mackenzie 1927
Sweet Creek	1	Geom	Line	3.0	--	RP	Verbal	Poor	Tuokko-Buchner
Betula	1	Effigy	"Turtle"	--	--	LP	Verbal	Destroyed	Cotter WAP 82
Pine Point	2	Effigy	Turtle	12.2	--	RP	Verbal	Destroyed	WAP 82
Reed Falls	2	Ambiguous	Line/ Snake	--	NE/SW	LP	Verbal	Destroyed	WAP 82
	3	Geom	Circle	--	--	LP	Verbal	Destroyed	WAP 82
Crowduck	1	Ambiguous	Line/ Snake	--	--	LP	Verbal	Destroyed	Simpson in Steinbring 1980

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